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Since it is a new departure for lectures on psychology to form part of the course at a school of this kind, you are probably wondering how the subject concerns you and what bearing it has upon matters of health; these questions I propose to answer.

This institution, like many others, has arisen because the growth of medicine has made it impossible for anyone to become familiar with all its branches, so that many of us have to specialise. The advantages of specialism are obvious, but one hears laments about the decay of the old type of family practitioner who "knew his patient's constitution"—that is, knew how he thought, felt, and tended to behave, and how he met his troubles; in short, what kind of man he was. The laments are justified, all the more because the growth of scientific medicine in the last half century led us to look for explanations of illness in terms only of what could be weighed or measured, seen or handled. Methods of approach that had survived from the days of Galen fell into disuse, and I shall show in a later lecture how in the early eighteenth century Stahl's shrewd descriptions indicated methods of observing and classifying patients that are now regarded as new-fangled inventions of the imaginative psychologist. I shall show, too, that in the understanding of one group of common disorders we have in recent years, thanks to Sigmund Freud, made the first great advance since the days of Hippocrates. Partly because of this advance, partly to restore the lost study of the patient as a whole, a new specialty has appeared which we may call clinical psychology or psychopathology. The latter should include the study of insanity, but that has already been enforced upon you and does not concern us here.

Let us look at some problems that demand the application of more than strictly "medical" knowledge. For the first you need only look at your daily papers, where you will find recorded a steady increase in claims for sick benefit. We are not told under what diagnoses the increase has taken place, but I have my suspicions about them. Any attempt to examine sickness incidence reveals strange variations in that group described as neurasthenia, nervous debility and the like, and the variations pass over into other groups that at first sight have no connexion with the first. Here are some figures showing this curious relationship; they give the days lost under selected diagnoses in the sick returns of a large industrial establishment:—

	1923.	*1924.*	*1925.*
Anæmia	257	386½	418
Gastric	476	624	890
Dysmenorrhœa	197½	174	177½
Neurasthenia, nerves, and general debility ..	1705½	1206	1070½

Average staff is about 960, and 85 per cent. are females. Days lost per annum, 7·2.

I happen to know that the medical officer tried to reduce the incidence of neurasthenia and succeeded in so far as neurasthenia was converted into anæmia and "gastric," but the totals remained about the same. I recently met the medical officer, who told me his people still stay away for lengthy periods and return with the news that they have had a "nervous breakdown."

Dysmenorrhœa is placed among the table because that disorder behaves epidemiologically like those of the *neuro* group. One establishment with a very low sick-rate has a negligible amount of dysmenorrhœa: another has a high sick-rate of which dysmenorrhœa provides a large percentage, so that the absolute incidence in one firm is probably 20 times what it is in the other. Dysmenorrhœa, like "gastric," is a disorder of symptoms without signs and demands attention from the psychopathologist rather than the gynæcologist.

If the distribution of these disorders could be ascribed to the physical conditions of the work we should not be so helpless, but variations between reasonably comparable establishments are extraordinary. Of two concerned in clerical work one, for example, has 3·6 days' sick leave per head per annum and the diagnoses are all of straightforward illness or accident, such as we are accustomed to in hospital experience; the other has 7·7 for men and 14·1 for women, and two-thirds of the long sicknesses are due to "nervous breakdown," "nervous debility," "general debility," and the like. If these causes of absenteeism were excluded the rates in the two establishments would approximate to equality. In this example one reason for the difference is that the medical staff of the first have paid attention to the kind of person likely to develop such disorders and have made an attempt to exclude him when examining would-be employees. In making the effort they were obliged to develop their own methods; our text-books offer no guidance, though a reference to Stahl might have helped.

In spite of the importance of these disorders no candidate at a qualifying examination expects to be asked about them, and if you seek for information about "nervous breakdown" in a modern text-book you will probably draw a blank. I shall deal with nomenclature later on, but for the present will assert dogmatically that in regard to these conditons we know nothing useful or practical about the state of those anatomical structures called nerves. When we study its history we find that our terminology rests not upon clinical but upon metaphysical grounds. The story of *neurosis* in particular is a strange one, and when I hear the word freely used I want to be an examiner and ask "What is a neurosis and how would you treat it?" I will add that I hope to define *neurosis* in a later lecture, and may be bold enough to indicate lines of treatment.

The importance of our use of the word is shown by the 80,000 men invalided from the Army for what is now admitted to be a "cardiac neurosis" but was known as "Disordered Action of the Heart" or "D.A.H." Of this disorder Sir James Mackenzie wrote[1]:—

"Hospitals for the investigation of the heart were set apart; groups of doctors with special knowledge of the heart were detailed for this investigation, and every conceivable device was employed.

"For several years such investigations were pursued with the greatest industry, and if to-day we seek for the increased

* A lecture delivered at the School on Sept. 29th, 1930, being the first of a course of six on industrial psychology.

[1] Diseases of the Heart, Oxford Medical Publications, 4th editions, 1925, p. 9.

knowledge of the heart that has accrued, it will not be possible to detect the slightest pain."

"D.A.H." is, from the standpoint of the psychopathologist, the physical result of an emotional state, and as long as we investigate the heart and neglect the emotional state we shall find our results sterile.

A similar impasse has occurred in connexion with that occupational neurosis called miners' nystagmus; for half a century attention has been concentrated upon it as a physical disease (though, strangely enough, no post-mortem examination has ever been reported), and only lately has the psychopathologist been invited to coöperate. The number of fresh cases increased from 386 in 1908 to 2865 in 1920, and local epidemics are still perplexing official circles. Every disabling symptom in the disorder is typically psychoneurotic, and there is no basic difference between the miner with nystagmus and the miner with any other "nervous breakdown."

The influence of compensation plays a part in the increase of this and other disorders, but we must beware of the easy misconception that the sufferers are malingerers. If upon every "nervous" patient were forced the alternative of work or starvation, some would work who now benefit by our increasing care for the sick, others would starve, and some would find a speedier end. The subject is full of pitfalls, and the psychopathologist has to fight on two fronts. He is accused of libelling innocent people by regarding them as "neurotic" when he maintains that their symptoms are due to disorders of feeling or emotion; on the other hand, when he declares that a person is ill in whom no physical disease is present he may be accused of abetting a malingerer. This happened in the war in the case of shell-shock, which was regarded as a physical condition arising from the effect of high explosives, and those clinical psychologists who maintained its mental origin were accused of libelling our brave soldiers; when its mental origin was established the same clinicians had to defend the men from the contempt of those who now declared that the right way to treat shell-shock was to shoot every man that had it.

I lately examined ten miners suffering from "traumatic neurasthenia" (words that are a prostitution of scientific terminology); only two showed signs of physical disease, and in one only did I make a diagnosis of malingering—that is, of wittingly complaining of symptoms that he knew did not exist, in order to avoid work he could properly perform. One or two complained of symptoms that they knew did not exist, but that was because their existing symptoms had never been elicited, and they feared ridicule and unbelief if they disclosed them: clearly they were subjects for the psychopathologist, and not malingerers.

The occupational neuroses, among which miners' nystagmus, telegraphists, and writers' cramp are conspicuous, are of infinite variety. They occur in mill hands in China and in makers of scientific instruments in England, so that you must be prepared to meet them anywhere. Miners' nystagmus and other occupational neuroses, nervous breakdowns, traumatic and many other so-called neurasthenias, "disordered action of the heart," and other physical conditions called neuroses, are all forms of the same problem, insoluble except by informed study of its psychological elements; together they make up a great part of the disability arising from sickness.

We now hear of "tropical neurasthenia," and I have listened to a discussion of the subject that showed how fatal to the communication of ideas was the fact that none of us had been taught what symptoms to look for and how to describe them. I have lived for ten years in tropical and subtropical countries and suspect that tropical neurasthenia will come under the same general formula that covers other occupational neuroses. There is already evidence that the study of temperamental reactions in selecting personnel might reduce the incidence of occupational neuroses, and this principle has been successfully applied in at least one firm with extensive eastern connexions. Here I am reminded that Messrs. Farmer and Chambers, following up statistical work demonstrating that there is an accident-prone section of workpeople, have shown the possibility of detecting the members of that section by objective tests.[2] Dr. May Smith and myself, working on other lines, believe that we can also detect these people, and that we shall be able to link up the objective findings with temperamental or psychoneurotic qualities.

I hope I have made it clear that you are likely to meet problems understandable only by a study of the human being as something more than the sum of his physiological reactions.

PULMONARY TUBERCULOSIS IN GENERAL PRACTICE,

WITH SPECIAL REFERENCE TO THE DIAGNOSIS OF THE EARLY CASE.*

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"So I brought her to hospital so as you could put the X rays on her chest, and find out what really is the matter." (Out-Patient's Mother.)

We have heard much in late years about the decline in the mortality from pulmonary tuberculosis. Propagandists claim that the Captain of the Men of Death is himself a-dying, and even though the account of his death, like that of Mark Twain, may have been grossly exaggerated, the statistics and graphs of public health departments clearly show a steady fall in the death-rate from tuberculosis in both sexes and in all age-groups—with one notable exception. Even a casual survey of the figures reveals the profoundly disquieting fact that females in the later years of adolescence and in the early years of adult life have not shared in the general improvement. In some districts the death-rate has even increased in the 15–25 age-group. The cause of this special susceptibility of young females is unknown. It may be Nature's comment on the modern assumption that men and women are fitted to do the same work. In general, girls of to-day live a healthier life than those of yesterday. In less than a generation increased opportunities for exercise and fresh air have abolished chlorosis, the malady once most incident to maids, and the only recent change in the life of young women that might have been expected to affect health adversely has been that from the shelter of domestic to the stress of factory and office life. It is noteworthy that the only effective treatment of tuberculosis is rest. Girls engaged in business hardly know the meaning of the term. It is possible that a clue may

[2] A Study of Personal Qualities in Accident Proneness and Efficiency, Industrial Health Board Report, No. 55.

* Being the substance of a lecture given to post-graduates at the hosp tal.

be found here. However, the problems of preventive medicine do not directly affect the general practitioner, whose primary concern is the diagnosis and treatment of disease.

Every practitioner knows that the only hope for the young consumptive lies in early diagnosis and immediate treatment. What do we mean when we speak of early diagnosis and what treatment can we offer to our patients with any confidence as to its efficacy?

The Importance of Radiology.

Sir Norman Moore in reminiscent mood used to tell his students of a physician of the old school who carried a stethoscope, not from any personal conviction of its efficacy as an aid to diagnosis, but in deference to the prejudices of his younger colleagues. We used to smile. Yet the old gentleman doubtless felt like the hero of "Milestones" that no one could call *him* conservative. The tenacity with which we cling to the teaching of our student years is a tribute to those who laid the foundations of our professional knowledge. We remember the days when we were taught that scientific instruments could never replace clinical observation, when with infinite labour we strove to master the difficulties of palpation, percussion, and auscultation. The clinical pictures we formed were based on the information thus obtained. It is difficult to learn. It is sometimes more difficult to unlearn. Yet the time has come when we must recognise that chest radiology has proved that much of the former teaching was wrong. The X ray tube is a more searching and a far more accurate instrument than Laennec's tube. If we neglect to use it so far as we can, we are guilty of repeating the folly of the old physician. The only difference is one of a milestone. The methods of physical examination are, indeed, still necessary, but their intelligent application is only possible when we have learned to correlate sounds with shadows. Percussion and auscultation supply circumstantial evidence, and circumstantial evidence is often that on which judgment must be based, but Radiology supplies more direct evidence. It enables us, in common phrase, "to see for ourselves." It is true that the radiologist's pictures are only shadowgraphs, but his art is constantly improving. There is as much difference between a chest skiagram taken five years ago and one taken to-day as there is between an early Victorian daguerreotype and a Bond-street portrait-photograph. The picture of the bronchial tree following an injection of lipiodol will usually supply more convincing evidence of the condition of the lung tubes than direct vision with the bronchoscope. Further, apart from the use of X rays we can now with the aid of the thoracoscope inspect the pleural cavity, the collapsed lung, and the pericardium during life. Thus though we are not yet able to dispense with any diagnostic aids, though a careful clinical examination must still be the prelude to any investigation, we can look forward with confidence to the day when instruments of precision will dispense with the need for tests largely dependent upon personal factors.

Before showing how radiology has altered our conception of the meaning of the term "early disease" let us briefly consider the position before X rays had illuminated our darkness.

Former Fallacies in Diagnosis.

A friend who had had special opportunities for studying pulmonary disease before the war recently wrote concerning a patient sent for examination, "this is the kind of case I should once have thought myself clever about, but to-day I'm not sure if I am not making a fool of myself." The remark was shrewd. We used to think ourselves very clever in the days when, ignoring the stethoscope as too obvious a means of investigation, we practised the art of light percussion of the lung apices, and like Dr. Knock, found the beginnings of disease in every patient who approached us.

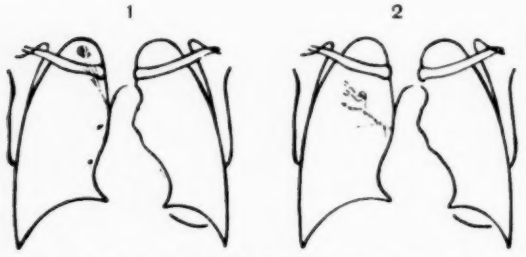
What was the impression we gathered from our text-books and clinical lectures 20 years ago? Phthisis began at one or other lung apex and spread downwards by a process of "apico-caudal progression." Once the disease was established with resulting caseation and cavitation it was incurable. Hence the supreme importance of early diagnosis and the constant attempts to elicit signs of early infiltration before any breaking down of lung tissue had occurred. The importance of the lightest possible percussion was emphasised and the need to detect the finest shades of difference in pitch or resonance in the supraclavicular areas. The unmusical were bewildered by dissertations on the varying quality of tones that might be elicited. In auscultation we were taught to take note of the slighest differences in breath sounds. Slight weakening of inspiration at one apex or a roughening of the breath sounds or a catchy quality might all be significant of disease. At the same time allowance had to be made for the physiological difference between the signs normally present on the two sides. This was bewildering, for if we found the breath sounds at one apex slightly weaker than those at the other we remained in doubt which side was affected—the left apex where the sounds were weaker or the right where they were harsher.

Further refinements in examination were developed. Braces of relative resonance crossing the shoulders or back were mapped out. Their width duly recorded in centimetres made us feel that at last physical examination had some claim to be regarded as an exact science. Also skin pencils to mark the limits of resonance and closed eyes during percussion were calculated to impress the patient. We shook our heads if one Krönig's band proved half a centimetre less than its neighbour. The finding of tubercle bacilli in the patient's spit, even the hearing of crepitations, were evidence of gross neglect on the part of someone. In such a case if things went wrong—and they usually did go wrong—we could console ourselves with the reflection that the patient had been sent to us too late for effective treatment. So the cult of "the early case" began and "cures" were multiplied. Indeed, there are still those who maintain that pulmonary tuberculosis is the most easily curable of diseases. The general practitioner who knows that most of his young consumptive patients die within a few years of the onset of symptoms may well be sceptical. If we exclude mild latent infections, primary infections of the childhood type, lesions situated above the clavicle, and certain of the more chronic fibroid types of the disease occurring in later life, pulmonary tuberculosis remains one of the most fatal of all diseases and one of the most difficult to treat, even in its early stages.

Modern Radiological Developments.

Early chest radiograms revealed the thoracic cage against a murky background. The shadow of the heart was obscurely seen with an ill-defined smudge about the size of a walnut on either side of it, representing the structures in connexion with the lung root. From each of these obscure linear striæ radiated for a few centimetres before becoming lost

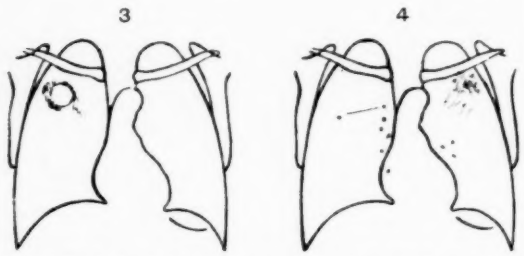
in the darker fields representing lung parenchyma. Anxious to assist the clinician in his search for evidence of early tuberculous infection, the radiologist reported "woolly hilar hadows" and "peribronchial" striations as evidence of incipient disease. For a time confusion was worse confounded, and it was not



1. Gladys K. Age 14. Healed true apical infection. No spread during four years' observation.
2. Winifred K. Age 23. School teacher. Three weeks from onset of cough. Previous health good. No tubercle bacilli found.

till the general adoption of the metallix tube, the employment of a time-switch, and of standardised distances that films could be taken under constant conditions and with optimum results.

The modern skiagram shows the cardiac shadow with clearly defined margins, the compact, though ragged, shadows of the glands and vessels of the lung roots, the trachea and its bifurcation, the broncho-vascular shadows spreading into the lung fields like the branches of a tree, their subdivisions visible till as slender as silk threads they reach their terminal ramifications. The lung parenchyma between these linea striæ forms a delicate grey background, a background against which any abnormality due to inflammation is easily detected. And, though the



3. Winifred K. Skiagram six weeks from onset of symptoms. No T.B. found. (After induction of artificial pneumothorax one positive sputum was obtained. Thereafter no T.B. were found.)
4. John B. Age 16. April 10th: "Influenza." May 12th: T.B. +. Skiagram of May 21st shows subclavicular mottling on left. No significant physical signs found on examination of chest. Note Ghon's focus in right middle zone and numerous small calcified nodes. Father suffers from phthisis.

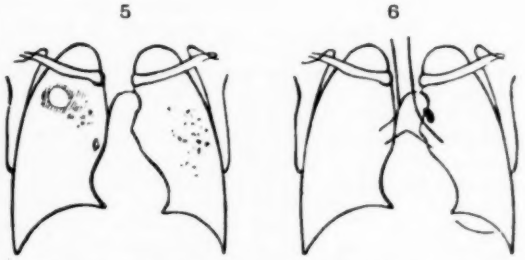
healthy pleura is invisible, any thickening is at once made evident as a marginal line or uniform clouding.

CORRELATION OF RADIOLOGICAL EVIDENCE AND PHYSICAL SIGNS.

Radiology has shown that the common onset of pulmonary tuberculosis of the type under discussion is an area of broncho-pneumonia situated below one or other clavicle, and revealed as a small area of coarse mottling in the centre of which a circular clear area may often be seen indicating breakdown of the lung tissue with resulting cavitation. This is the usual picture (Figs. 2, 3, 4, and 5). Less commonly heavier shadows in the lower lobe reveal basal tuberculosis. Occasionally a film shows supra-clavicular shadows due to apical tuberculosis, a relatively benign form tending to heal spontaneously (Fig. 1).

Still more rare is the "snowstorm" appearance due to miliary tuberculosis in which all areas of the lung fields exhibit a fine stippling. Radiology has shown that miliary tubercle is not inevitably fatal unless it is part of a tuberculous septicæmia. Somewhat similar are the pictures of disseminated tubercle which gives rise to coarser granular opacities, each of which may become calcified though fusion and breakdown are more commonly seen. Pleural infections, so often the forerunners of parenchymatous involvement, are not considered here.

Radiology thus confirms the old teaching of Kingston Fowler, that the first lesions of pulmonary tubercle are not usually apical, but are situated about one and a half inches below the summit of the lung. When first seen on the film, such an area may be no larger than a sixpenny-piece, but its spread is often



5. Florence P. Age 28. Sister died of phthisis. Large cavity in right subclavicular area. Physical signs: slight impairment of percussion note over right upper lobe and an occasional clicking râle below clavicle. No significant signs in right lung where skiagram shows tuberculous mottling.
6. Barbara J. Age 10. Skiagram of May 25th: Calcified tracheobronchial gland.

rapid, and within two or three weeks a considerable part of the upper lobe may be involved, and cavitation have commenced, as shown by a circular clear area in the centre of the mottling (Figs. 2 and 3).

In the stage of early infiltration, physical examination may fail to reveal any significant physical signs of disease (Fig. 4). Even when cavitation has occurred, the signs may be absent or slight (Fig. 5).

Older clinicians used to speak of the "silent cavity." We now know that the classical signs of cavitation are only found in exceptional cases. We may often infer the presence of a cavity from impairment of percussion note, slightly harsh breath sounds, sharp crepitations and the finding of tubercle bacilli and elastic fibres in the sputum, but bronchial or cavernous breathing, tinkling râles, cracked pot sound or post-tussic suction, are only heard in certain cases of large cavities with patent bronchi. For practical purposes, more than 50 per cent. of cavities are absolutely or relatively silent, and if cavities are often silent it is obvious that areas of early infiltration may be equally so. If we place too much reliance on physical signs we shall inevitably miss many cases of early disease at a time when treatment might be effective. It is, perhaps, unnecessary to add that X rays have shown that the refinements

of physical examination formerly practised are of no value.

Here is an example of the superiority of X ray examination over physical examination. I recently admitted to hospital a girl aged 10 years suffering from asthma. A skiagram showed a large calcified gland at the left lung root, the result of spontaneously arrested tuberculous adenitis (Fig. 6). Such a gland gives rise to no abnormal physical signs. A few weeks later her sister aged 3 years was brought to see me. The only abnormal sign was a slight impairment of the percussion note at the base of the right lung. The breath sounds over this area were normal, and the child's appearance was healthy (Fig. 7). A skiagram showed pleurisy of the right side, the surface of the lung being covered by a thin layer of fluid or thickened pleura, the interlobar fissure being also involved. The condition was almost certainly tuberculous. Here, then, were two children in the

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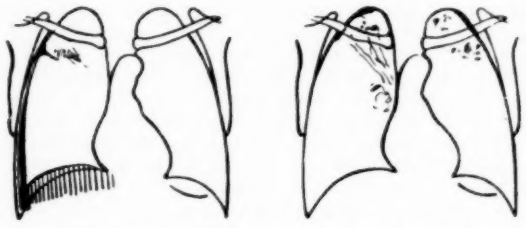

7. Doreen J. Age 3. Skiagram of July 8th: Pleural effusion on right side. Note involvement of interlobar septum and raised diaphragm.

8. Mrs. J. Mother of Barbara and Doreen (Figs. 6 and 7). Skiagram of July 10th: T.B. found. Pulmonary fibrosis with shrinking of right upper lobe. Softer mottling below left clavicle indicates more recent disease.

same family suffering from a mild tuberculous infection, in one case healed and in the other still active. The mother denied symptoms, but consented to be examined (Fig. 8).

There was slight impairment of note over the summit of the right lung and a few coarse râles could be heard at the apex. A skiagram showed definite evidence of a tuberculous fibrosis of both lung apices, the appearances being those of a very sluggish type of infection. Tubercle bacilli were later demonstrated in the sputum. Without the aid of radiology the tuberculous gland could not have been detected, the pleurisy might have been overlooked, and thus no attention bestowed on a hitherto unsuspected source of infection.

RADIOLOGY AND THE PRACTITIONER.

While insisting on the importance of X ray examinations, we must not forget that few general practitioners have access to radiological departments. Further, chest radiology is a highly specialised branch of the science, and few radiologists have had the special opportunities necessary for obtaining chest films of the best quality, and for the difficult task of their interpretation. A poor skiagram of the chest is worse than useless. If the shadows are not clearly defined the picture will be misleading For example, the margins of areas of healed tubercle are sharply defined. If definition is at all blurred, a healed area will be indistinguishable from active disease, or even the normal lung markings mistaken for the mottling of tuberculous infection, an error not infrequently made by radiologists whose technique is faulty and whose experience is limited.

Diagnosis without the Aid of Radiology.

SUGGESTIVE SYMPTOMS.

(*a*) The patient's manner should be studied. A tendency to make little of symptoms, to resent any concern being shown, and to insist that there is nothing

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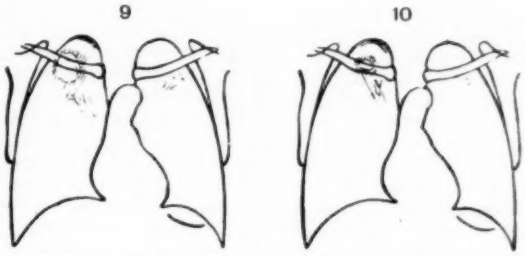

9. Ruby C. Age 27. Black Notley Sanatorium. Skiagram on admission, November, 1928: Large cavity in right upper lobe. T.B. present. Treatment by rest.

10. Ruby C. Skiagram of February, 1929: Cavity reduced to about a third of the original size by rest treatment.

the matter is a characteristic of the consumptive patient. (*b*) A history of "pleurisy" is so common and is so frequently due to erroneous diagnosis that little importance can be attached to it, but a history of pleurisy with effusion should be regarded as definite evidence of a previous tuberculous infection, unless known to be due to some other cause. (*c*) A history of close contact with a case of phthisis is not likely to be ignored by the family practitioner. (*d*) The young consumptive frequently dates her symptoms from an attack of "influenza." A febrile attack resembling influenza in a young person should always suggest the possibility of incipient tuberculosis. (*e*) Cough accompanied by expectoration and persisting for more than a week is an indication for a sputum examination. If expectoration continues,

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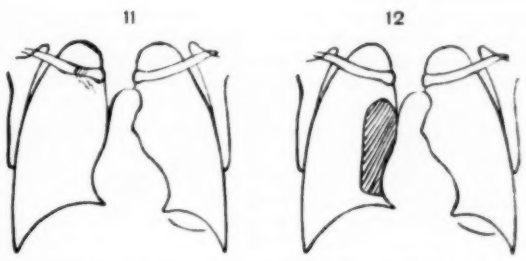

11. Ruby C. Skiagram of October, 1929: Cavity completely closed.

12. Winifred K. (see also Figs. 2 and 3). Less than a month after induction of pneumothorax on right side. The skiagram gives no evidence of the collapsed cavity.

at least three sputum tests should be made. (*f*) Lassitude often precedes and usually accompanies the cough, and is another warning symptom. (*g*) Hæmoptysis in a young person should always be regarded as due to tuberculosis, unless some other cause can be found. (*h*) Persistent loss of weight is a suggestive symptom.

PHYSICAL SIGNS.

Inspection.—In cases of chronic fibroid disease local retraction of the chest wall and diminished expansion are obvious, but as a rule little is to be gained from inspection of the chest of the early case.

Palpation.—The claim has been made that incipient disease may cause tonic contraction of the overlying chest muscles, but in my opinion this sign has not much value in diagnosis. Vocal fremitus is unaltered over early infiltrations. It is, of course, increased over solid lung whether due to fibrosis or an extensive area of broncho-pneumonia.

Percussion.—Percussion is a most difficult art, and even the hands and ears of the expert are not infallible. I am not referring to the dullness that is found when there is fluid in the pleural cavity or massive fibrosis of a lung or a new growth obstructing a bronchus, but to the impairment of resonance that is sometimes elicited over limited inflammatory lesions. The apex which seems to be slightly dull will suddenly become resonant after the stethoscope has revealed crepitations on the opposite side of the chest. The only physical signs worth recording are those which are definite, and during the examination of a chest imagination must be rigorously repressed.

Auscultation.—The most significant physical sign in the diagnosis of early phthisis is the hearing of crepitations. Their usual site is below the clavicle or in the axilla or internal to the spine of the scapula. Sometimes owing to conduction they are heard best above the clavicle. The character of the crepitations heard over an area of tuberculous infiltration is almost diagnostic. They differ from the coarser râles due to a simple catarrh and from the fine dry crackles often heard over the apices of middle-aged women which are due to the forcible expansion under examination of areas of lung normally atelectatic. A cough will often be required to "bring out" crepitations, and auscultation should always include examination during inspiration after coughing. Sometimes in the absence of crepitations a weakening of inspiration is a suggestive sign, but in most cases of early disease crepitations can be heard if the examination is sufficiently thorough. They are, however, often difficult to pick up, and if the disease is deep-seated have a distant and sticky quality. Isolated *temperature readings* are apt to mislead, but a daily record of the late afternoon temperature (say between 5 and 6 P.M.) can often be obtained through the services of a district nurse or midwife, and such a record is obviously valuable.

Bacteriological Examination.—It is surprising how often the examination of the sputum for tubercle bacilli is neglected. It is true that a single positive finding unsupported by other evidence of tuberculosis is not conclusive proof of disease. There even appear to be "carriers" of tuberculosis. But such cases are extremely rare, and the sputum examination remains the simplest, the most easily applicable, and on the whole the most valuable single test at our disposal. The practitioner who fails to apply it on every suitable occasion has omitted to complete his examination.

THE BIG FIVE.

During the winter rush of work, when the surgery is crowded and almost every patient complains of a cough, elaborate physical examinations are impossible. Yet when a young person of either sex complains of a cough with expectoration, tuberculosis must always be borne in mind. It can be excluded with some confidence if five negative conditions are satisfied.[1] It is unlikely that tuberculosis is responsible for the cough if: (1) there is no history of pleural effusion; (2) there is no history of hæmoptysis; (3) no crepitations are heard after coughing in any danger zones; (4) *no tubercle bacilli are found in three successive sputum examinations;* (5) X ray examination is negative.

If the first four conditions are satisfied a short period of observation with expectant treatment may suffice, but if the practitioner's suspicions are aroused by the patient's appearance or manner, by a history of contact with infection, or by the continuance of symptoms for more than a fortnight, a skiagram is essential. If the services of a radiologist with special experience in chest work are not available a second opinion should be obtained. In some cases a short period of institutional observation may be advisable. In every efficient sanatorium beds are set aside for the reception and investigation of doubtful cases.

Treatment.

The treatment of all forms of tuberculosis is rest. Despite the claim preferred on behalf of innumerable specifics rest remains the only effective form of therapy. It is necessary to emphasise this because the reaction against hermetically sealed windows and drawn bed-curtains has led people to think that the essential treatment is fresh air. Patients suffering from early phthisis whose only hope lies in rest, immediate, absolute, and prolonged, usually spend the waiting period before entering a sanatorium in wandering about the streets, the doctor having told them to "get out into the fresh air."

The diseased lung can be rested in two ways. If the disease is limited to a small area, if time is no object, and if the patient's patience is unlimited, rest in bed may be sufficient. Even a large cavity may heal with no other treatment than rest for a period of some months (Figs. 9, 10, and 11). In other cases recumbency for two or three years may be necessary to secure arrest of disease. But such healing can only be expected in favourable cases. The resting period can be shortened, and in most instances far more effective relief to the diseased lung can be secured by artificial pneumothorax and other forms of collapse therapy (Fig. 12). There are still sanatoria where this kind of treatment is neglected. At such institutions patients realise months of boredom punctuated by the injection of such animal, vegetable, or mineral poisons as may have taken the fancy of the staff. Unless the disease is already advanced when the patient first comes under treatment the chance of recovery is at least doubled by artificial pneumothorax. Even the apparently hopeless case may be restored to fair health and a measure of activity by this means and the incurable maintained in reasonable comfort for prolonged periods. Recent improvements in technique have enabled us to obtain a satisfactory collapse of the lung despite the presence of adhesions, for these can now be safely divided by the diathermy cutting cautery under thoracoscopic control, and even cases in which artificial pneumothorax has failed owing to universal adhesions may be saved by the modern operation of external pneumolysis or thoracoplasty.

No mention has been made of the various schemes of the public health authorities for the diagnosis and treatment of tuberculosis, for these are outside the scope of the present paper. But it should not be forgotten that the tuberculosis officer can render aid in providing a second opinion, arranging for radiological or other special examinations, and in securing sanatorium treatment for patients. An efficient tuberculosis officer may thus prove a valuable ally.

[1] Brown, Lawrason: Jour. Amer. Med. Assoc., 1928, xc., 1032.

THROMBO-PHLEBITIS MIGRANS.*

BY JOHN A. RYLE, M.D. LOND.,
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THE occurrence of cases of phlebitis with thrombosis, sometimes widespread and recurrent but lacking any clear ætiological associations, has long been recognised. Such cases, although not common, are by no means excessively rare. They are distinct both in their history and their course from those forms of thrombo-phlebitis which complicate the specific fevers or follow operations and the puerperium, or which have been recorded in connexion with syphilis, tuberculosis, malignant disease, and anæmia. They are not due to varicosity or other chronic disease of the veins. It is possible that some of the cases of phlebitis formerly ascribed to gout may have belonged to this special group. Sir James Paget [1] reported cases of diffuse superficial phlebitis, both gouty and non-gouty, as long ago as 1866. More recently an interesting account of four cases has been given by Moorhead and Abrahamson,[2] under the title of "Thrombo-phlebitis Migrans," in three of which wandering superficial thromboses of this kind were accompanied by visceral thromboses. Five similar cases, four of them with visceral thromboses, have come my way, and I am sure it will be in the experience of others to have encountered examples of this condition from time to time in the ordinary course of practice. Campbell and Morgan [3] have lately recorded a case of brachial thrombo-phlebitis complicated by severe headache and tubular vision, due possibly to thrombosis of posterior cerebral vessels, and also by cardiac symptoms with cardiographic findings suggesting a coronary thrombosis. Carey Coombs [4] has mentioned cases of coronary thrombosis in association with peripheral phlebitis, including one case in which a pulmonary and then a cardiac thrombosis preceded thrombo-phlebitis in the thigh. Briggs [5] and Herrick [6] have reviewed the subject of wandering phlebitis, but they gave no account of visceral lesions.

The name thrombo-phlebitis migrans seems to me admirably suited to the condition. The process is essentially migratory, the lesions showing dissemination both in space and time, as will be seen from an examination of the case reports given hereunder. The same nomenclature has been applied to a rarer condition in which the phlebitis spreads gradually along the course of a particular vein or veins. As, however, this may be described more correctly as a "creeping" than a "wandering" process, it would seem that thrombo-phlebitis migrans is more appropriate to the disease under discussion.

Moorhead and Abrahamson expressed themselves as unable to throw any light on the ætiology of the condition. In one of their cases, it is true, the first superficial phlebitis followed a mosquito bite on the same limb after an interval of a week; a month previously, however, the patient had had an unexplained pleurisy which, in the light of later events, may well have been due to a primary pulmonary thrombo-phlebitis. In another case the first phlebitis occurred in the leg three months after a superficial burn on the corresponding foot. In a third there was severe pyorrhœa. Owen [7 8] has sought to associate the condition with influenzal epidemics, but in none of my cases nor in those described by Moorhead and Abrahamson was there any good reason to suspect influenza as an ætiological factor. I am more inclined to agree with him when he suggests that many of the obscure pleurisies of practice associated with red hæmoptysis are due to small pulmonary thromboses of infective origin.

The cases which I propose to describe confirm and amplify the observations of Moorhead and Abrahamson and also serve to indicate some of the difficulties in diagnosis which may arise over the visceral lesions. One case is included in which there were symptoms of visceral thromboses without the involvement of any superficial vein. In three of the five cases there was good reason to suspect the influence of chronic focal sepsis. The period within which symptoms of wandering thrombo-phlebitis continued to arrive is indicated in brackets at the heading of each case.

Report of Five Cases.

CASE 1. *Thrombo-phlebitis affecting both legs* (1924–27).—A young man, aged 23, previously in robust health, first developed phlebitis in the calf of the right leg in 1924. This was slow to mend, and he eventually had the vein excised. He was then well until the first week of October, 1927, when he again developed phlebitis in both legs. A fortnight later he was found to have a tender molar tooth. This was extracted. When I first saw him in consultation with Dr. C. Sherris on Nov. 27th, 1927, the legs had cleared completely, but he had just developed a fresh phlebitis involving a short segment of one of the veins on the dorsum of his right foot. At one time he had had an enlarged epitrochlear gland, but there was no history of syphilis, and the Wassermann reaction was negative. There was no gouty history. A differential blood count showed no abnormality. Clotting time was normal. Mr. Kelsey Fry, on clinical and radiographic evidence, advised the extraction of four dead teeth, and reported as follows: "Three of the dead teeth that I have extracted showed marked apical absorption, and as they had never been filled, I must presume the infection was blood-borne. Were th y the cause of the thrombosis, or are they due to the same cause?" Two years and a half have now elapsed without any further symptoms of phlebitis or other ill-health.

CASE 2. *Thrombo-phlebitis affecting one leg, both lungs, and intra-abdominal veins* (March–July, 1924).—A man, aged 58, was submitted to my care by Dr. T. D. H. Holmes for phlebitis of the right leg, which had already necessitated his lying up for a month.

For some months previously he had felt "out of sorts" and disinclined for work, but he had had no other illness of importance. For ten days prior to my first seeing him he had had an almost continuous stomach-ache, but in the last two days both this and the leg discomforts had definitely improved. The stomach-ache throughout had been aggravated by deep breathing which caused "a sensation of something raw or of friction within the abdomen." Ten days after his admission to the nursing-home he developed pleuritic pain at the left base, with pyrexia and slight hæmoptysis and a leucocytosis of 27,000 cells per c.mm. During the following week he developed friction patches at the right base and over the left upper lobe in front. His sputum was always red and not "rusty." A pleuritic effusion followed on the left side, the aspirated fluid showing red cells, lymphocytes, and polymorphonuclear cells in about equal proportions. For a time before expectoration ceased the sputum became malodorous, coming presumably from a breaking down infarct. Finally, after an illness lasting four months, he made a complete recovery.

It should be noted that the pulmonary symptoms first developed when the leg symptoms had almost subsided, and roughly six weeks after the first sign of peripheral phlebitis. It seems reasonable to argue

* Based on a communication given before the Association of Physicians in London on June 6th, 1930.

from the sequence of events, as well as from the analogy of other cases, that the bilateral pulmonary symptoms, and possibly the upper abdominal symptoms, were here expressive of a wandering thrombo-phlebitis, similar to that which had occurred in the leg.

CASE 3. *Thrombo-phlebitis of left leg, left lung, and right foot* (Dec. 1st, 1929, to middle of January, 1930).—An overworked medical man of middle age and fine physique had a serious breakdown in health at the beginning of 1928.

His illness started with obscure fever and diarrhœa. In the previous year he had sought advice for some minor anginal symptoms, and had had tenderness over the gall-bladder. He was carefully investigated in a clinic where he was found to have gastric achylia and some dental sepsis. Later he became very anæmic, and was thought by one physician to have pernicious anæmia. The glands in his neck became enlarged. Eventually, after some dental extractions, he lost his symptoms and returned to work, remaining well throughout the summer and autumn of 1929.

I was called to see him on Dec. 1st, 1929. He had then been confined to bed for ten days with phlebitis at the back of the left knee, which came on after sitting with crossed legs at a theatre. For the past two or three days he had had soreness, fullness, and flatulence in the epigastrium. On Nov. 30th he began to have violent and agonising spasms of pain in the left lower chest, suggesting to him and to me spasms of the diaphragm and lower intercostal muscles. These were induced by the slightest movement of his trunk, and he preferred to remain upright in a chair scarcely daring to move. His breathing was shallow and quick. There was slight crowding of the ribs on the affected side with deficient movement and entry, but little or no impairment of note and no audible friction. The inflamed portion of vein in the leg was not more than two inches in length and quite superficial, and there was no evidence of extension to larger or deeper vessels. The temperature did not exceed 100° F. I diagnosed pulmonary thrombo-phlebitis.

On the next day he started to have some small hæmoptyses and simultaneously developed a fresh phlebitis on the dorsum of his right foot. Excepting for transient pains in the left axilla and the left loin he had no further symptoms suggestive of visceral involvement, but progress to complete recovery was interrupted by five other very small thromboses affecting superficial veins of the left leg and foot. During the earlier phase of the illness a blood culture was negative; the leucocyte count was 12,200 cells per c.mm., whereas he had always previously shown a marked leucopenia; a *Streptococcus viridans* was grown from the sputum. Radiograms later showed marked opacity of the right antrum, a doubtful right frontal sinus, and three definitely infected teeth. The infected teeth were extracted. The last thrombosis followed a few weeks after the extractions.

It seemed reasonable to suppose that this wandering thrombo-phlebitis was a late sequel of his septic illness of the previous year, and due to lingering focal infection. There was no reason to consider gout as a factor.

CASE 4. *Thrombo-phlebitis affecting both legs, both lungs, and a cerebral vein* (1924–29).—On April 13th, 1929, I was asked to see, in consultation with Dr. G. T. Cregan, a spinster, aged 53, who gave the following history.

In 1897 she had rheumatic pericarditis. In 1907 she had herpes of the scalp and developed anginal attacks for which she saw Sir James Mackenzie. During the war period, in which she was employed with arduous and responsible duties, she became unfit for a time, and a streptococcus was grown from the urine in 1915 and again in 1917. In 1919 she had a return of anginal pain and severe streptococcal infections of the throat. Between 1919 and 1924 she was treated with vaccines. In 1924 she had an acute illness with anginal symptoms, rigor, a pulse-rate of 140, thrombosis in the left leg, and bilateral pulmonary "embolisms" with hæmoptysis. In January, 1925, she had otitis media. In May, 1928, she had a septic throat and right-sided "pleurisy," and coughed up a little blood. In September, 1928, she felt stiff in her left face, her left hand became "woolly," and she was sick. She was at this time in bed for a month with slight fever. By November, 1928, she was again very ill with hæmoptysis, and some sterile fluid was aspirated from the right chest. Her sputum grew Friedländer's bacillus, streptococci, and pneumococci. In December, 1928, she had a new thrombosis in the left leg with œdema. In January, 1929, the right leg became affected, with red patches and a tender point in the groin.

The patient was of obese habit, and at the time of my examination both legs remained slightly swollen. Her tonsils were very unhealthy. Grip and power of discrimination were poorer in the left than the right hand. There was a family history of erysipelas affecting her mother, one uncle, one aunt, and a brother. I saw her again in February of this year, when she had had another attack of tonsillitis with quinsy, but no further phlebitis.

CASE 5. *Thrombo-phlebitis affecting abdominal and pulmonary veins* (April–July, 1929).—A burly, broad-chested coal magnate, aged 49, after fishing in Scotland, became shivery and unwell, but decided to travel by road to his home in the south of England. The next day he had epigastric pain.

He arrived home on April 28th, 1929, with a temperature of 102° and pain in the upper abdomen aggravated by coughing and deep breathing. The abdomen was then soft and flaccid. By May 1st, however, it became tense and distended, and there were some rose-coloured spots. At this time attention was focused on his abdominal condition, and a few days later his doctor, Dr. L. Leslie, called in Mr. J. L. Joyce for a surgical opinion. The possibilities discussed included typhoid fever, cholecystitis, pancreatitis, and an inflamed retrocæcal appendix. The pulse-rate did not exceed 76. There was no diarrhœa and no splenic enlargement. Blood cultures remained sterile and Widal's test was negative. Total and differential leucocyte counts showed no abnormality. By May 5th the temperature was falling.

On the evening of May 6th he was seized with very severe pain between his left costal margin and the left scapula. At frequent intervals during the next 24 hours he had agonising constricting pains in the epigastrium so that breathing was shallow and difficult and he dared not move. Simultaneously the temperature rose to 103° and the pulse to 100. A slight occipital headache transferred itself to the frontal region. Leucocyte count 18,000 cells per c.mm. I saw him at 10.30 P.M. on May 7th with Dr. Leslie and Mr. Joyce. Now and then he had had spasms of epigastric pain which caught his breath. There were no signs of cardiovascular disease. There was general distension of the abdomen, but no spots remained. Excepting for showing crowding of the left lower ribs with slight impairment of movement, the physical examination was otherwise wholly negative.

I was asked to see this patient again on June 3rd at the end of the sixth week of his illness. After my previous visit the temperature had at first gradually settled, but then rose again with a return of pain and the development of an effusion at the left base. For a few days bright blood was expectorated. On May 30th the temperature had fallen to normal. Two days later it rose again, and on June 2nd there was a slight rigor together with a new agonising pain below the right nipple; it is noteworthy that during the previous week the patient had experienced a pain at this point on coughing or sneezing. The condition of the abdomen had improved in the meantime. There was no enlargement of liver or spleen. Blood culture negative. Sputum examination negative. The fluid previously withdrawn from the left chest was slightly turbid and blood-stained, showing red cells and leucocytes in the deposit, but was sterile on cultivation. A fresh effusion on the right side now gave exactly similar fluid.

I diagnosed wandering pulmonary thromboses. The violent spasmodic pains were exactly like those described in Case 3. The fluid was characteristic of pulmonary infarction and like that obtained in Case 2. The red hæmoptysis was typical of infarction. At no time was there anything suggestive of an ordinary pneumonia. I am inclined to the view that the earlier abdominal symptoms were also due to visceral thromboses. Although in the foregoing notes stress has been chiefly laid upon the pulmonary manifestations, it should be mentioned that the advisability of laparotomy was discussed on more than one occasion, and there were several other consultations, at which I was not present, with regard to the proper interpretation of the abdominal symptoms. The patient made a complete recovery.

Discussion.

In the group formed by these five cases, together with six others recently described in some detail in the English literature (Moorhead and Abrahamson 4, Campbell and Morgan 1, Carey Coombs 1) there were eight examples of pulmonary thrombosis; four clear or presumed examples of abdominal thrombosis; three probable examples of cardiac and two of cerebral thrombosis. Although two of my patients had had anginal symptoms I was not satisfied that these were attributable to coronary thrombosis. In addition to involvement of both upper and lower limbs, Moorhead and Abrahamson also reported cases with thrombo-phlebitis affecting the face and the abdominal wall.

In those cases in which pulmonary symptoms have followed phlebitis in a limb it might be reasonably suggested that the symptoms were due to small embolisms and not to thromboses. Against this view are (1) the sequence "left leg, left lung, right foot" in Case 3; (2) the late arrival of the lung symptoms in Case 2; and (3) the occurrence at one period in Case 4 of thrombotic lung symptoms independently of any recent superficial phlebitis. In Case 5 there were symptoms of pulmonary thrombo-phlebitis without any superficial lesion, but there may have been abdominal thromboses. In the case described by Carey Coombs the peripheral thrombo-phlebitis followed the pulmonary and cardiac lesions. Furthermore, the fact that thromboses in the heart, the brain, and the abdominal organs are described renders the hypothesis of pulmonary thromboses equally acceptable. In Case 5 signs and symptoms of a pulmonary thrombosis in the right lung were preceded for a week by slight pains, possibly representing the period of antecedent phlebitis.

In Cases 1, 3, and 4 there were very strong grounds for associating the thrombo-phlebitis with streptococcic focal infection. In no case were there symptoms or signs of a septicæmia, and in Cases 3 and 5 blood cultures were negative. In Moorhead's series also blood cultures were uniformly negative. If, therefore, focal infection is to be regarded as of ætiological importance, the phlebitis must be due to a bacteriæmia rather than a true septicæmia. There was no history or family history of gout in my series and in no case were there racial or other considerations in favour of thrombo-angiitis obliterans, a disease which may, according to Buerger,[9] be heralded by a migrating superficial phlebitis.

Summary.

These cases are reported as supplementary to Moorhead's account, and because the clinical picture does not at present appear to be as familiar as it might be. On the basis of the descriptions quoted, thrombo-phlebitis migrans may be defined as a disease in which phlebitis appearing usually in small lengths of superficial peripheral veins is sometimes followed by symptoms of inflammation with small vascular obstructions in the lungs, the abdomen, and more rarely in the heart and the brain. Visceral thromboses may also precede or occur without superficial lesions. The disease tends to run a long and tedious and often interrupted course. Fever and leucocytosis commonly accompany each fresh development. Although it may give rise to serious illness and much anxiety, the prognosis is favourable, presumably because the thromboses are venous, because they do not as a rule spread to larger trunks, and because there is no associated septicæmia. The pulmonary thromboses may be heralded by agonising bouts of spasmodic pain or by ordinary pleuritic symptoms which precede hæmoptysis, when it occurs, by hours or days. A faintly turbid and blood-stained pleuritic effusion sometimes follows. The abdominal thromboses are characterised by pain and distension and occasionally (vide Moorhead and Abrahamson) by melæna. The symptoms of the cardiac and cerebral thromboses do not differ from similar lesions of other causation, but, as small veins rather than arteries are probably involved, prognosis again need not necessarily be regarded as unfavourable. Treatment is expectant and symptomatic. Liberal fluids and potassium citrate may reasonably be prescribed. Obvious focal infections should receive attention at the proper time. Perhaps the most important single conclusion to be drawn from a study of these cases is that thrombo-phlebitis of this type is to be remembered as an occasional cause of cerebral, cardiac, pulmonary, and abdominal accidents which might otherwise prove difficult to explain.

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TREATMENT OF EMPYEMA IN CHILDREN.

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Empyema, a term which in this paper is used in its ordinary loose sense of an abscess of the pleural cavity secondary to an acute infection of the lung, is notoriously a difficult and unsatisfactory condition to treat, and the younger the patient the worse are the results. This state of affairs has naturally caused the evolution of a large number of widely differing methods of treatment (an excellent summary of which is given by Chandler [1]), but none of them has been generally accepted. Though I need hardly disclaim any finality for the variations described in this paper, a description of them and the reasoning that led to their use may be of general interest. The method has at any rate stood some share of three of the main tests, having been used for several years, by several different hands, and in a wide variety of cases. About the results obtained, though they seem to me to be encouraging, I do not like at this stage to say more. To analyse them properly in a disease so protean, every case should be considered in relation to the following factors:—

1. The actual mechanical condition of the abscess and the surrounding structures. In no other surgical condition are these so complex, variable, and important; and it is almost entirely from this angle that the problem is attacked in this paper.

2. The time-relation of the formation of the abscess to the original pneumonia. This is perhaps the most important single factor in prognosis, and for a discussion of the immensely increased risks in the "syn-pneumonic" cases I would refer to writings by Cameron [2] and Graham.[3]

3. The age of the patient. This in children is extremely important, mainly owing to the greater liability of infants to the syn-pneumonic form.[2]

4. The type of infecting organism. The importance of this, though obvious, is very difficult to assess. There is no doubt that streptococcal infections incline to the syn-pneumonic form more than pneumococcal ones and are, to that extent at least, more deadly.

5. Complications, such as pericarditis and metastatic abscesses. The younger and weaker the patient, the more common these are.

6. Intercurrent diseases, such as measles and ear infection. In London children these have a very marked influence on the gross death-rate.

7. The length of time the empyema has been present before the beginning of treatment.

8. The results at least a year after cessation of treatment, checked by X rays. Every surgeon has had to deal with recurrences which he knows were classed by the original operator as successes.

The difficulties of discussing in this way the cases treated are so obvious that I would depend for justification of my method on the statement of the reasoning responsible for it, as being possibly more convincing, as it is certainly more assailable, than the usual table of results. As I have said, I intend to confine myself almost entirely to the mechanical point of view, but even here the teaching in text-books of physiology, pathology, and surgery is so vague and so contradictory that I must first shortly state my own opinions on two fundamental points. These are the actual means by which the body cures the condition, and the effects of the measures taken by the surgeon to aid it in doing so.

Methods of Cure.

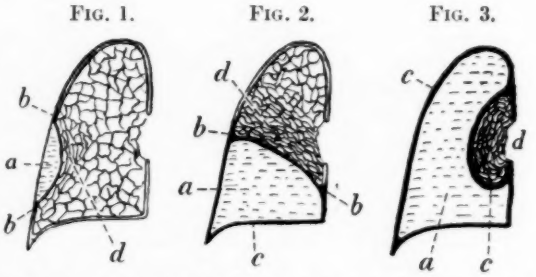
The condition with which we have to deal is an accumulation of pus in what should be merely a potential space between the pleural layers, causing evil results partly from absorption of toxins and partly from compression of the thoracic contents. The body has three ways of dealing with such a collection: the first is by absorbing it, as in many peritoneal effusions; the second is by organising it, as in a blood-clot in a wound; and the third is by evacuating it with a subsequent growing together of the walls that have contained it, as in a quinsy. In an empyema the first of these methods is of little use; the pleura cannot compare with the peritoneum in its capacity to deal with purulent effusions. The second is in this disease one of the body's many misdirected surgical efforts, and is much more of a hindrance to healing than a help. The pus secreted by the pleura is usually a plastic fibrinous fluid, of such low virulence that it can be organised into fibrous tissue where it coagulates on the walls of the containing cavity,[4] which finally may become lined with a stiff layer that interferes both with the expansion of the lung underneath it and with the absorption of the remaining fluid. The third method is in this, as in all abscesses, the best.

In some regions of the body, where the abscess walls are merely displaced soft tissue, obliteration of the cavity is automatic upon its evacuation; in others, where the walls are rigid, it is a matter of the utmost difficulty. (What would not the surgeon give for an easy method of blotting out some of the cavities that lie scattered among the skull bones?) In empyema the problem is midway between the self-obliterating quinsy and the persisting antrum: the part of the abscess wall reinforced by the ribs is rigid, while that formed by the lung varies widely both in its stiffness and in its readiness to join the other.

It is important to realise the extreme variations in the actual structure of the abscess and its surroundings. Fig. 1 shows the most favourable type of case, in which a small collection of pus (*a*) is walled off by adhesions (*b*) from the normal pleural cavity. The pleural lining of the abscess is not thickened and the lung is uninjured, so that the compressed portion (*d*) is ready to expand and obliterate the cavity as soon as the pus is let out. Fig. 3, on the other hand, shows a very different condition. The entire pleural space is occupied by the pus (*a*), and both pleural layers (*c*) are thickened and stiffened by a layer of organised fibrin deposited upon them. The lung (*d*) is compressed into a small solid mass, the tissues of which, apart from being bound down by the contracted pleura, have had their power of expansion spoilt by inflammation and fibrosis. Fig. 2 is an intermediate condition.

Any method of treatment should always be considered in relation to the two extremes. A series of cases like Fig. 1 will give good results whatever is done to them, while it is obvious that there is no speedy and facile cure for the condition shown in Fig. 3.

The most important factor in the cure of an empyema is that reaction of the body by which two granulating surfaces—such as the pleural layers become where they form the abscess walls—develop at any point of contact a powerful and persistent tendency to grow together over their whole extent. This is because at the meeting point the granulations fuse, and the fused mass, in changing into its final form of



FIGS. 1–3.—Diagrams illustrating variation in the structure of empyema abscesses. *a* = pus; *b* = adhesions; *c* = pleura; *d* = lung.

scar tissue, contracts, so pulling together the granulations immediately in front to repeat the process (Fig. 4). In the unopened empyema this force of adhesion is counteracted by the incompressible fluid contents; but when these are let out it works to pull the lung out to the chest wall. It is even strong enough, if the lung refuses to expand, to reverse the process, and to cause severe deformity by pulling the chest wall in on to the visceral pleura. From the point of view of the healing of the abscess cavity alone, the expansion of the lung is only of importance in so far as it makes it easy or difficult for this adhesion to occur.

I do not think an empyema is ever cured except by the complete growing together of the two layers of the pleura, with or without a covering of organised exudate, over the whole abscess cavity. The pleural space may possibly re-form in parts owing to the proliferation of surviving endothelium, but I have been unable to find any case in which this regeneration approached the completeness that is often found

after a plastic peritonitis. The typical result is the final and complete obliteration of the cavity over the area involved. If, therefore, this progressive encircling adhesion is taken to be the method of cure, time must be allowed for it to occur; if free drainage ceases while there is still a cavity left, the only hope of cure lies in the very limited absorptive power of the pleura.

Effects of Surgical Measures.

The part of the complicated and debatable mechanics of the chest that most concerns the treatment of empyema is the effect produced by opening the pleural space. In the normal chest the main results are two. The first is a partial collapse of the lung, due to the loss of the negative pressure on its outer surface; but

FIG. 4.

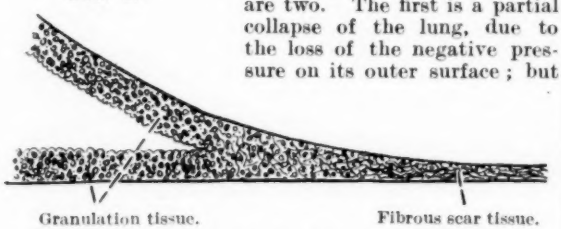


Diagram to show fusing of two layers of granulation tissue.

this collapse is very much less complete and dangerous than used to be supposed. The old teaching was that on admitting air freely to the pleura the lung shrank into a useless lump, and that consequently the opening of both cavities together meant instant death. It is now well known that, though the lung collapses to some extent, yet respiration can be carried on with both pleural cavities communicating with the outside air.

The second effect, the rush of air on inspiration into the pleural cavity through the wound, instead of into the lungs through the trachea, is far more important and more dangerous. When the chest expands, air tends to stream into it, and if there are two routes available the share of each will be in proportion to its cross-section. If the opening is so large that, in the competition to fill the chest between the wound and the trachea, the latter does not get enough air, distress and death ensue.[3] This relation between the size of the opening and the damage it does was well illustrated in the war, when men with minute bullet punctures of the chest were often quite comfortable, while those with large shell wounds suffered an agony of dyspnœa.

In an empyema, however, instead of a potential space lined by a thin membrane and under a negative pressure, there is a collection of fluid enclosed in walls of varying stiffness and under varying degrees of positive pressure from the thoracic contents which it has displaced. Any normal pleural cavity that may remain is shut off from the abscess by the adhesion of visceral and parietal layers at its borders, and the lung itself is compressed in proportion to the size of the accumulation. The result is that when an empyema is opened, instead of the contraction of the lung that follows the opening of the normal pleura, there is an expansion, to a degree governed by the state of the lung tissue and the overlying pleura.[5]

The effect of the entrance of air during inspiration will obviously vary again with the size of the cavity and the stiffness of its walls. With a small thick-walled abscess, however freely it is opened, there will be very little interference with the supply of air to the lungs, but when the inner wall of the abscess is a large and flexible area of pleura the effect on respiration may be almost as great as if the normal chest had been opened. It is to be remembered that an empyema found during the course of a pneumonia will be of this type, as the walls will not have had time to stiffen, and consequently if it is opened freely the maximum of respiratory disturbance will be produced in just the patient who has the minimum resistance to it.

A third result of opening an empyema is the reaction caused by removing an incompressible mass of fluid from amid the compressible and sensitive thoracic viscera. This, of course, varies with many factors, the most important being the size of the collection and the rate of evacuation. Also, as methods of operating that allow a rapid outflow of pus usually permit a free entrance of air as well, it is not often easy to assess the exact share of damage done by each of these factors. But there is no doubt that in some cases the sudden change of pressure in the chest may cause serious shock, especially where the heart has been much displaced.

The conclusions are, that though there is no danger from collapse of the lung on opening an empyema, both rapid release of pus and free entrance of air should be avoided.

Treatment.

This falls into the usual two divisions: the treatment of the patient and the treatment of the disease. If the empyema appears as a syn-pneumonic one, that is to say that the abscess forms while pneumonia is still causing critical illness, temporising treatment alone should be considered. As has been pointed out, any free opening of the chest, as by rib resection, will lower still more an already lowered vital capacity, with almost invariably fatal results.[2 3 7] The pus should be prevented from causing pressure on the heart and lungs by slow aspiration, as complete as possible and as frequent as necessary, until the pneumonia has resolved. The accumulation may re-form rapidly and need tapping every second day; one tapping may tide over the dangerous stage, or in a very small percentage of cases a cure may result from aspiration alone. In this, as in all other points, each case is a law unto itself, but in the great majority the abscess will continue refilling indefinitely until continuous drainage is established, so that this should not be put off longer than is absolutely necessary. As it is necessary to temporise in some of the cases diagnosed early, so also is it necessary in some of those diagnosed late. A child who has been carrying a pint of pus in the chest for a month or two is often extremely ill, and stands interference extremely badly. Here a slow aspiration of the fluid will relieve the heart and greatly improve conditions at the operation a day or two later. A proper diet, fresh air, and good nursing are as important in this as in any other disease, and I am convinced that in the cases where attack and defence are so evenly matched that it is hard to foretell the outcome, blood transfusion is often of the utmost value.

In the actual drainage of the pus numberless methods are used, varying from extreme simplicity to extreme complication. As the operation is generally performed in this country to-day, a segment of rib is removed under a general anæsthetic, the pus is allowed to gush out, and a large tube retained by a safety-pin is put in. This tube is usually found outside the chest each time the wound is dressed, and there are no very clear indications for finally leaving

it out beyond a difficulty in getting it in. Various types of tubes with flanges to prevent them pulling out are used, but these are difficult to insert in a conscious patient, and in many the flange is so large that it must interfere with healing. The bad points of this method are the comparative severity of the operation, the lack of control of egress of pus and ingress of air, and the liability to trouble caused by infection of the cut ends of the ribs. This may vary from slow healing or breaking down of the wound to actual reinfection of the pleural cavity and may to some extent be avoided by plugging the exposed cancellous bone with Horsley's wax at the time of operation. Its good points are the free drainage and the simplicity. An advantage often claimed for it is that it allows the inspection and "freeing" of the lung, but—with children especially—the extreme shock that can be produced by a large opening in the chest is not improved by raking about inside. Any clots that can be removed in this way can be better removed by irrigation, the adhesions at the edge of the abscess should be left to circumscribe it, and that extremely rare condition, a true loculated empyema, is not likely to be discovered at operation unless previously diagnosed. It is hardly necessary to point out that a loculus can only be definitely excluded by digital exploration when the entire pleura has been examined. (By a loculated empyema I mean one in which there are two or more collections of pus with no connexion between them; in what is usually called by this name there are merely fibrinous septa partially dividing the cavity.)

I have never been able to understand exactly what is meant by the process so often recommended of "breaking the adhesions that are binding down the lung." Certainly it would be a good thing if by any safe method we could immediately remove all thickening from the pleura, but I do not think anyone would advocate a kind of primary decortication in children.

Then there are the methods of making a large opening in the chest, vigorously cleaning out the cavity, and sewing the wound up, usually with aspiration through a corner of it afterwards. This is so obviously inapplicable to children that it need not be discussed here, but it seems to me to exaggerate both the shock of the open method and the uncertainty of the closed.

Disadvantages of Closed Drainage.

At the other extreme from the open treatment there are many types of "closed drainage," the principle of which is to suck out all the pus through a small tube introduced by trocar, and to suck up the lung to its full size without ever letting in the outside air to collapse it.[8] It is an attractive idea, but a critical examination of its theory and practice discloses the following disadvantages and difficulties:—

1. Incomplete emptying of the cavity, which is important owing to the absorption of toxins from the residual pus and to the tendency of this pus to organise. It is obvious that unless the cavity can be obliterated completely it can only be emptied of fluid when gas is injected to replace it; but obliteration is impossible in most cases and the injection of gas is very seldom suggested. Even if the lung would rise to the chest wall all over the cavity on complete withdrawal of the pus, this withdrawal is only possible when the opening of the tube coincides with the lowest part of the cavity; the difficulties of ensuring this are obvious. (A series of experiments in emptying rigid glass jars and collapsible rubber hot-water bottles by means of airtight suction will be found very illuminating on these points.)

2. The difficulty of ascertaining the occurrence and amount of the negative pressure in the cavity, and our ignorance of its effects. Most systems have no manometer to show whether an actual vacuum is produced or what is its degree. Even if there is a manometer and it shows a negative pressure there is no way in which one can be sure that there is this pressure in the cavity, and that the end of the tube is not blocked by clot or hanging like a leech to the wall.

As to the effect of a localised low pressure on the tissues very little is known. If suction sufficient to neutralise the very moderate force in the capillaries is kept on a piece of skin, that skin will slough. The effect would probably be different on a granulating surface, and just possibly a passive hyperæmia that would quicken healing might occasionally occur, but there are no means of ensuring or controlling this. As to the effect on the lung substance, this would surely be rather to bring fluid into the tissues than to expand the alveoli.

3. The difficulty of getting an airtight junction between the chest wall and the drainage-tube, which is due to that bodily reaction by which the tissues shrink from the pressure of any foreign substance. The tube may be a close fit when first inserted, but the next day it is loose, and by the end of the week it is sliding easily through feeble granulations. Some systems ignore this difficulty entirely, and others try to overcome it by various arrangements of adhesive plaster between the tube and the skin. These are surprisingly difficult to keep adjusted, even in a biddable adult, and the discharges from the wound tend to burrow an excoriated passage beneath them, this outlet becoming increasingly easy as the epithelium to which the plaster originally stuck is cast off by the natural processes of the skin.

4. The difficulty of cleaning the tube when it is blocked, an annoyance that is by no means rare with thick pus and a narrow-bore tube.

5. The impossibility of free irrigation of the cavity. Running fluid in and sucking it out again is a poor substitute for washing it through.

6. The difficulty of keeping the tube long enough to empty the cavity but not so long that it impedes healing.

7. Finally, there is the familiar surgical problem of how to ensure that a small drainage-way will remain open as long as there is still matter behind that should drain through it. The small puncture will close almost in a night when the tube is once withdrawn, and if the cavity on the other side is too large, or the infection too virulent, the result is a recurrence of the original abscess.

The good points of the closed method are, however, undoubted, and I think it has saved many lives which would have been lost with cruder treatment, even though secondary operations have been ultimately needed. The trivial operation under a local anæsthetic, the control of the rate at which the pus is evacuated, and the avoidance of any large inrush of air, are all factors that may make the difference between life and death.

The method now to be described is an attempt to retain these advantages and yet to give free drainage and allow irrigation with an easy outflow. It does not need the constant attention of a mechanically minded surgeon, and there are definite indications for the cessation of drainage.

Technique Recommended.

The anæsthetic should, in every case where it is possible, be a local one; and I think that with a very fine needle for the skin, plenty of patience, and plenty of 0·5 per cent. novocain, any child can be handled in this way. At any rate, for at least two years all cases coming into the Hospital for Sick Children, Great Ormond-street, were so done. In the severer cases there is no doubt that a general anæsthetic does a great deal of harm; the child is already in difficulties with its breathing, and when it feels any interference with this it naturally begins to struggle desperately. This is quite apart from the consideration that chloroform is notoriously dangerous in toxic children, that ether is a lung irritant, and nitrous oxide an asphyxiant. I may say here that when I speak of the dangers of operation I do not necessarily mean that the child dies on the operating table, but rather that it is easy to give children a "shock to the system," by trauma and anæsthetic poisoning, from which they never really recover.

The point of incision varies with the situation of the pus, but is most often over the sixth or seventh interspace in the posterior axillary line, close to what is believed to be the centre of the abscess, near the mark of a needle that has withdrawn pus. I think it is a mistake to aim for the line of reflection of the pleura on to the diaphragm, as is often advised. Drainage from this point is hindered by the dome of the diaphragm, which is also in distinct danger of perforation at the operation if the pleural layers are adherent; its only advantage, which is drainage from the lowest part of the cavity, can be better attained otherwise. In babies under two this operation, like most others, is made much easier if they are bandaged to the form of "crucifix" I use,[6] and in many cases access is most convenient if the child lies face downwards.

A cut about 2 inches long is made in the line of the ribs, the intercostal muscles are detached from the lower rib of the space chosen, and the pleura is

FIG. 5.

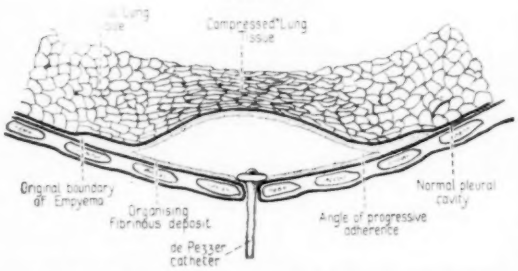
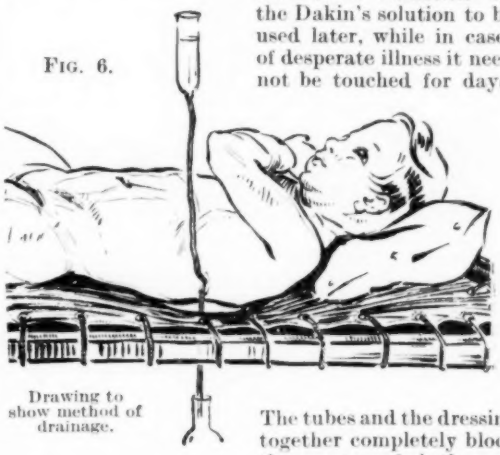


Diagram illustrating a drainage of an empyema cavity through a de Pezzer catheter.

exposed. Into this, with allowance for its variable thickness, a pair of blunt-pointed dissecting scissors is thrust, and gently opened to make a wound about an inch long. If no pus is found, a piece of rib is resected and a finger put in to explore, but this is very rarely necessary unless the abscess is interlobar or on the diaphragm. When pus appears, its gush should be instantly stopped with a swab and two de Pezzer self-retaining catheters inserted by means of their stylet. The bulbous ends of these instruments hold them in place just inside the opening and prevent the exit of fluid in any way except down their tubes, which for the time being are kept closed by clips. The size of catheter should be chosen to fit each case, from No. 18 for a baby to No. 28 for a child of 10.

The wound is not sutured, but a dressing of gauze soaked in liquid paraffin is packed tightly into it and held by a many-tailed bandage. This dressing is painless to remove, and the paraffin protects the skin from irritation by the Dakin's solution to be used later, while in cases of desperate illness it need not be touched for days.

FIG. 6.



Drawing to show method of drainage.

The tubes and the dressing together completely block the passage of air through the wound, and so an open pneumothorax with all its hurtful effects is avoided.

The child is then put back to bed in the only piece of special apparatus used, a sheet of canvas, laced by eyelets round its border to a frame which is attached to the bedposts. This frame can be either a stock fitting for a hospital cot or can be rigged according to circumstances in a private house; an ambulance stretcher makes quite a satisfactory one. To one side of the middle line, about 2 feet from the head end, there is a hole 4 inches in diameter, and the child is arranged (and, if necessary, kept in position by harness) so that the wound is directly over it. The chest sags down into the hole, and the lower de Pezzer catheter leads directly downwards through it into a bottle of antiseptic. By this means one of the simplest and most important of surgical rules is observed—the rule of draining from the lowest part of a cavity (Figs. 5 and 6).

The child is then allowed to rest for an hour or two to recover from the stress of body and mind to which it has been subjected, and only when it has settled down are the clips released to allow the escape of the pus. When this has ceased to run a sterilised glass funnel is attached to the upper tube, and from a height of 2 feet fresh Dakin's solution, at a temperature of 105° F., is run in, washing out the rest of the pus by the lower tube. As the solution is warm there should be no shock from change of temperature in the chest, and, as there is a free exit, a very moderate head of fluid, and the cavity is on the underside of the body, so that there can be no weight pressing on the thoracic organs, I do not think there is any danger from pressure effects. I have never seen the irrigation cause the slightest change in the child's condition, nor have I heard of any harm resulting in hospitals where it is used as a routine on patients of all ages.

I know there is a tradition that washing out the pleural cavity has caused sudden death, and very possibly the use of cold solution might produce dangerous shock. But from what I can find out about these cases, apart from those that occurred during the thorough toilet of the cavity at the time

of the operation which I have already deprecated, the probable reason for the disaster was the use of excessive pressure with lack of free exit for the fluid. When one finds the older text-books advising against the use of a syringe one gets a hint of the way in which some of these deaths may have occurred.

The quantity of fluid used varies with the size of the child and the amount necessary before it runs clear, but it is usually from a half to one pint. The irrigation should be repeated at three-hourly intervals during waking hours for the first week, and then three or four times a day. Later, when the patient's condition permits, he can be moved about and rolled over while the irrigation is going on, so that the fluid penetrates freely all over the cavity. Should the tubes become blocked they can easily be pulled out and replaced almost painlessly by means of the stylet.

I consider this irrigation of the very greatest importance for two reasons. The main one is that Dakin's solution will dissolve fibrinous deposits even after their organisation has begun,[3] so preventing the stiffening of the inner wall of the cavity. The second is that it sterilises the primary infection and prevents a secondary one from developing. This is obviously important in lessening the absorption of toxins, but although almost all persisting cavities are secondarily infected, I regard this as an effect rather than a cause of the persistence. To dress a wound leading into an admirable culture medium for weeks without allowing the entrance of infection demands a perfection of asepsis rarely attained; but if the lung is able to expand and obliterate the cavity I cannot imagine any ordinary infection preventing healing.

After-care.

When the temperature has been normal for a few days and the child's age and condition allow, he is encouraged to sit up and do blowing exercises, one of the best being the driving of coloured water from one Woulfe's bottle into another. As the act of blowing raises the air pressure inside the lungs, it must be of value in stretching the contracted alveoli and helping the circulation. A second and even more valuable form of exercise is that given by getting the child on his feet as soon as possible, an advance that has effects of the utmost value on the lungs, circulation, and morale. It is, of course, impossible to lay down any definite time for this, but in the less serious cases it is often possible at the beginning of the second week. During walking and sitting up both tubes are held in the many-tailed bandage, but when the child lies down the original position is kept with drainage directly downwards into fluid and the upper tube closed by a clip.

The final stage is in many ways the most difficult of all. The tubes should not be kept in longer than necessary, yet if the opening is allowed to close before the cavity inside is obliterated trouble is only too likely to occur. Obviously the thing to watch is the gradual diminution of the cavity, and the first sign of this is usually the decrease of the sucking-in of air on inspiration through the wound when this is temporarily left open during dressing. Of course, this sign is not really definite; if the walls are stiff enough there will be no sucking, whatever the size of the cavity, but its gradual diminution usually betokens the progressive adherence of the two pleural layers. The irrigation gives, however, a much better way of measuring progress. One tube is removed, and after leaving the child with the wound downwards so that all the contents run out, a test is made with the wound upwards to see how much solution can be poured down the tube into it before it overflows. Of course, the critical amount varies with the size of the child, but if size 28 catheters are being used one should be left out permanently when the cavity holds less than 10 c.cm., and the wash-out continued through the other alone. By this time the opening in the chest wall will have enlarged so that there is an easy outflow for the irrigation fluid. When less than 5 c.cm. can be poured in without overflowing the remaining tube is removed and the wash-out given thrice daily through a soft rubber catheter. When this can no longer be pushed in between the ribs the irrigation is stopped and the wound dressed with paraffin and allowed to heal.

It will be seen that there is no attempt to make time the indication for any step in the treatment, or the saving of it the main recommendation of this technique. I think it is very satisfactory to get an ordinary empyema healed in three weeks, and it is quite needless to attempt to shorten this period, though I am well aware that it is possible to get much more rapid closure by other methods. In my opinion, the quick successes are too dearly bought at the price of secondary operations on the failures; it matters very little to the patient and the surgeon whether a wound is dry in ten days or in thirty, but it matters vitally if it breaks down after healing. The typical persistent sinus is not the result of an empyema that has discharged continually, but of one in which the wound has healed and then broken down again.

It is beyond the scope of this paper to deal with the treatment of persisting sinuses, but the same technique of washing out and discontinuing drainage will often be found extremely useful after they have been opened up.

My thanks are due to the honorary staff of the Hospital for Sick Children for their help and advice in the series of cases on which this paper is based, and to Dr. C. A. Keogh for his drawing in Fig. 6.

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FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—An all-day post-graduate course in medicine, surgery, and the special departments is in progress at the Metropolitan Hospital, and applications for the second week are invited. The following special courses begin in October: a course in diseases of the ear, nose, and throat, at the Central London Throat, Nose and Ear Hospital, from Oct. 6th to 25th, consisting of a clinical course and operative surgery and pathology classes (strictly limited); a course in gynæcology at the Chelsea Hospital for Women, from Oct. 13th to 24th; and a course of 17 lectures suitable for (but not restricted to) candidates for the M.R.C.P., on Tuesdays and Fridays, from Oct. 7th, at 8.30 P.M., at the Medical Society's lecture room. Dr. L. J. Witts will give the first lecture, on Recent Work on the Liver. At the same place a course of demonstrations in clinical surgery and pathology for the final F.R.C.S. will be given once a week for six weeks, at 8.30 P.M., beginning on Oct. 8th. Four demonstrators will attend each evening and will provide two cases each. Contrary to the statement made on the syllabus itself fees must be paid in advance and tickets cannot be issued at the lecture hall. Particulars of all courses may be obtained from the Fellowship at 1, Wimpole-street, London, W. 1.

CLINICAL AND LABORATORY NOTES

ACUTE TORSION OF THE SPERMATIC CORD.

BY HAROLD UPCOTT, F.R.C.S. ENG.,
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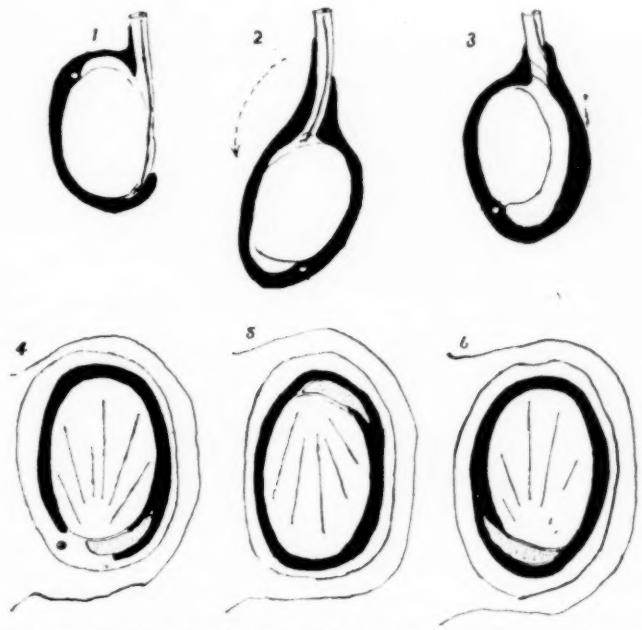
AXIAL rotation of a fully descended testis within the tunica vaginalis is prevented by the normal attachment of the epididymis to the posterior part of the tunica. This attachment, or mesorchium, extends along the epididymis, leaving only the globus major and minor free; there must be some deficiency in this anchoring band before rotation becomes possible (Fig. 1).

IMPERFECT DESCENT OF THE TESTIS.

Campbell[1] found that in nearly half of 145 recorded cases of torsion the testis was imperfectly descended; it is evident, therefore, that there is a high incidence of axial rotation among those with imperfectly descended testes. This suggests that such testes have only a short attachment to their serous envelopes. Such a condition of insecurity may also result from inversion of the testes, where the organ lies upside down, epididymis in front, suspended in the tunica by the cord entering the globus minor (Fig. 2). The following case is an example.



The upper drawings show the right testis from the medial aspect. (1) Normal testis. (2) Inverted testis. Epididymis lying in front. (3) Clockwise rotation of inverted testis through 180 degrees (or 540 degrees) bringing epididymis to the back and digital fossa to the medial side. The lower drawings represent transverse sections of the right half of scrotum, Figs. 4, 5, and 6 corresponding to Figs. 1, 2, and 3, respectively.

The right testis of a youth, aged 19, had never reached the bottom of the scrotum but had always lain in the upper part. At intervals of a few months since the age of 15 it had become swollen and painful, these recurrent attacks lasting only a day or two.

Three days before I saw him he was seized with sudden very severe pain in the testis, far more acute than any previous attack. He vomited. The testis swelled up and remained swollen and tender. On examination the upper part of the right scrotum was occupied by a tense globular mass two and a half inches in diameter and acutely tender. The skin over it was dark red, and the cord swollen and tender.

Incision of the tunica exposed a swollen, purplish-black testis lying with the epididymis behind and the digital fossa on its medial aspect. The testis was free in the tunica except for its attachment to the cord, which was twisted from without inwards one and a half complete turns (Fig. 3). The cord was divided above the tunica and the testis removed with its coverings.

After removal the combined testis and epididymis resembles a deep purple plum. On its medial aspect (as it lies with the testis in front) is a deep sulcus representing the digital fossa. Along its lateral aspect a shallower groove marks the division between testis and epididymis. The latter is relatively more swollen than the former. It is nowhere attached to the tunica vaginalis except above, where it hangs suspended by a short pedicle, a quarter of an inch in diameter, formed by the structures of the cord. This pedicle is tightly twisted through 540 degrees so that the testis is drawn close up to the top of the sac. By rotating the testis one and a half complete turns in an anticlockwise direction the twist is undone, and the testis lies with the epididymis in front and the digital fossa on its lateral aspect. Attached by a narrow pedicle to its lower pole is a flattened hydatid of Morgagni, compressed by the pressure of the swollen testis against the tunica. The vas springs directly from that pole of the epididymis which lies uppermost, and is absent from a transverse section through the middle of the testis and epididymis. The gross appearance suggests an infarct of the tissues.

In the case recorded above the diagnosis was clear. Sometimes the condition is closely mimicked by a strangulated hernia.

ECTOPIA TESTIS; STRANGULATED INTERSTITIAL HERNIA.

A youth, aged 19, had always had a lump in the right groin. On the morning of his admission to the nursing home he was seized with a severe pain in the groin and in the centre of the abdomen. Sickness and pain had continued throughout the day and the bowels had not acted. He was found to have a tense tender swelling above the middle of the right Poupart's ligament. The right testis was absent from the scrotum. Though torsion of an undescended testis was considered as a diagnosis, the severity of the symptoms made a strangulated hernia more probable.

Operation half an hour later revealed a hernial sac lying between the external and internal oblique aponeuroses and containing clear brownish fluid, and a coil of small gut nipped by the neck of the sac. The testis lay in the upper part of the sac nearest the navel. The bowel, being viable, was returned and the undeveloped testis removed with the sac.

Sometimes neither of these diagnoses will be right.

STRANGULATED UNDESCENDED TESTIS.

A boy, aged five months, had a swelling in the right groin for two days. On the day before examination he vomited, and the next day the bowels did not act. Examination showed that the right testis was absent from the scrotum. Just above the middle of the right groin was a fixed, tender swelling the size of a filbert.

Incision exposed a deeply congested testis protruding from the deep inguinal ring. The organ was tightly nipped by the ring, the globus major being within the abdomen. The ring was enlarged and the testis drawn out; the

[1] Campbell, M. F.: Surg., Gyn., and Obst., 1927, xliv., 311.

cord was œdematous but not twisted. The testis was removed.

Symptoms suggestive of an acute torsion of the spermatic cord may therefore be associated with three different conditions of the testes: inversion, ectopia, or failure to descend. The possibility of strangulated hernia should not be overlooked.

ELIMINATION OF ARSENIC AFTER SHEEP-DIPPING.

By Sir Thomas Oliver, M.D. Glasg., F.R.C.P. Lond.,

EMERITUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF DURHAM.

In The Lancet of March 1st last an interesting paper entitled Sheep-dipping and the Shepherd was published by Prof. I. Walker Hall, of Bristol University, and Mr. Rowland H. Ellis. With the opinions expressed I am in full accord, and should like to add my own experience. A month ago there was sent to me from the Northumberland moors a well set-up healthy looking shepherd, aged 35, married, who gave the following history.

After a day's sheep-dipping in August, 1925, a red rash appeared on his skin from the ankles to just above the knees; the skin was hot and painful. The herd did not lie up on account of it; he simply dressed the affected limbs with olive oil. By the third day the rash had, practically speaking, disappeared and was followed by desquamation. For several days he was the subject of diarrhœa, for which he could not account. The stools were free from blood. There was no vomiting. He gradually recovered, but 20 of the sheep he had dipped died; one, which had a sore on its back, during the process of dipping, and six on the following day. By the third day the remainder of the 20 sheep had died. So far as the herd remembers the sheep had no diarrhœa; they frothed at the mouth and lay on the ground unable to rise.

In August, 1929, this same shepherd, after having dipped over 200 sheep in three days, awoke one morning feeling extremely weak, with his arms and legs so stiffened that he could hardly move them, but as the hours passed the condition of the limbs improved that later on in the day he assisted in leading sheep to the dipper. That evening he drove a flock of sheep to the farm two or three miles away, but at the end of the journey he was so completely exhausted and had such severe pains in his legs that, as he could hardly support himself, he was obliged to go to bed. His speech became affected, that he was with difficulty understood. On the following day there was frequent vomiting attended by acute abdominal pain; the vomit contained blood, but there was no diarrhœa. Next day, when seen by a doctor, his case was diagnosed as acute inflammation of the stomach, and treated accordingly. For a week afterwards patient was the subject of repeated vomiting. At this stage jaundice developed and persisted for a few weeks, attended by considerable epigastric pain. There was marked paresis but no paralysis of the limbs. There was distinct impairment of his mental faculties, and nearly all the hair of his head was shed.

DETECTION OF ARSENIC.

It was not until January of the present year, nearly five months after the dipping referred to, that he was able to return to his general duties as a shepherd, but, as he was forbidden to dip, his wages were reduced. He looks healthy and is physically fit for ordinary work. Heart and lungs are healthy, and beyond the abdomen being more tympanitic than usual, the internal organs appear to be normal. The urine is free from albumin and sugar; knee-jerks are completely absent; blood pressure is 142 systolic and 102 diastolic. I sent a sample of the urine and hair to a chemical laboratory, and the note received states that, in both of these, arsenic is present. Under this circumstance it would be unwise to allow the shepherd to undertake dipping at present. The interesting point is that according to text-books arsenic is said to be a non-accumulative poison, but in the case I have detailed, although it is more than a year since exposure to the poison, arsenic is still being eliminated by the kidneys and the hair.

THE PRACTICE OF DIPPING.

There is a general opinion among sheep farmers that carbolic acid and arsenic are the most efficient agents in sheep-dipping compounds. They effectively clear the fleece of parasites, but they are poisons. Sheep-dipping takes place two or three times during the year. The times vary in different parts of the country. Here, in Northumberland, we are a little later than in the south. It is highly desirable that the lambs should be dipped during the summer months, two weeks after the ewes have been clipped. They thrive better after a dipping. If the "fly" is troublesome the ewes are put through a bath in which carbolic acid and soft soap have been dissolved, omitting the arsenic on account of the lambs, and sprinkling the body with sulphur instead. The next dipping generally takes place in late October or early November before the ewes are sent away to wintering, and again sometimes after their return before being sent to the hills. This not only clears them of parasites but keeps them free from disease when travelling. No matter what dippings have taken place, it is the custom to dip the older sheep in October or November before the tups are put to the ewes. This is not only a hygienic measure, but if satisfactorily carried out the animals need not be handled for some months afterwards.

Among sheep there often develops what is known as "scab," which is liable to assume epidemic proportions and is extremely difficult to get rid of. It is due to a mite which attacks the woolly parts of the animal's body. Instead of an arsenical dip, one containing lime and sulphur, or tobacco juice and sulphur, or carbolic acid and soft soap gives the best results as regards riddance of the pest. The hands and forearms of the dippers are not protected. The men wear a long waterproof apron. If the bath contains an unusually large percentage of carbolic or cresylic acid dermatitis may be induced, but it is the presence of arsenic in the bath which, when absorbed, is probably the cause in the dipper of vomiting and diarrhœa, of the physical weakness complained of, also of colic and muscular pains, as well as of a protracted period of indifferent health.

ADENOMYXOMATOUS POLYPOID TUMOUR OF STOMACH

ASSOCIATED WITH A SIMPLE LESSER CURVATURE ULCER.

By G. Norman Clark, M.B. Aberd.,

HOUSE SURGEON, HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

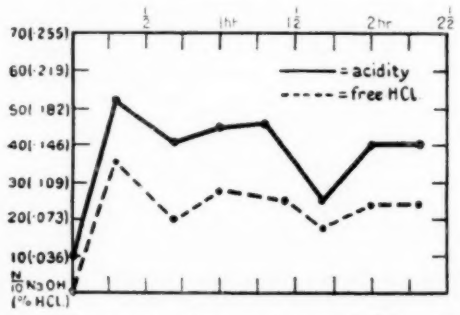
A man, aged 47, admitted to hospital on Feb. 4th, 1930, had suffered for six months from flatulence and attacks of severe abdominal pain, occasionally sufficient to double him up. The pain was referred to the mid-line, 3 inches below the xiphoid process, and radiated round the left side of the body to between the shoulder-blades. The pain was accompanied by vomiting of clear fluid, which gave him immediate relief. He had had no previous gastric trouble and thought he had lost weight recently. Five years ago all his teeth were extracted for pyorrhœa.

A preliminary diagnosis of carcinoma ventriculi was made.

On admission he looked ill and anæmic, yet a red blood corpuscle count was 6,340,000, with a colour-index of 0·7. Some gastric peristaltic movements from left to right were visible below the left costal margin. He was tender below the left costal margin and mid-way between the xiphoid and umbilicus; pressure below the xiphoid caused nausea.

A fractional test-meal (see Fig. 1) yielded a non-foul gastric residuum of 15 c.cm. containing a few pus cells,

FIG. 1.



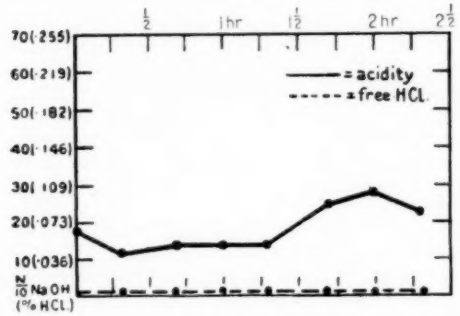
Fractional test-meal acidity curve showing high reading for the first fraction.

a moderate number of epithelial cells, mucus in large amount, and a trace of occult blood. Continued secretion was not definite and the emptying time was somewhat prolonged. Dr. C. R. Lane reported: "There is definite chronic gastritis and there may be a non-juxtapyloric gastric ulcer, though the findings are rather indefinite on this point. There is nothing to suggest malignancy."

A barium meal was given, and Dr. H. C. Gage reported: "Small three-hour residue, negative filling defect close to pylorus on greater curvature, nature and significance doubtful but just possibly growth—possible polypus. I feel it only safe to regard it as growth till proved otherwise."

On laparotomy by Mr. G. E. Waugh, under gas and oxygen and intercostal infiltration anæsthesia, on Feb. 7th, 1930,

FIG. 2.



Post-operative fractional test-meal showing absence of free acid from all the fractions and a low total acidity.

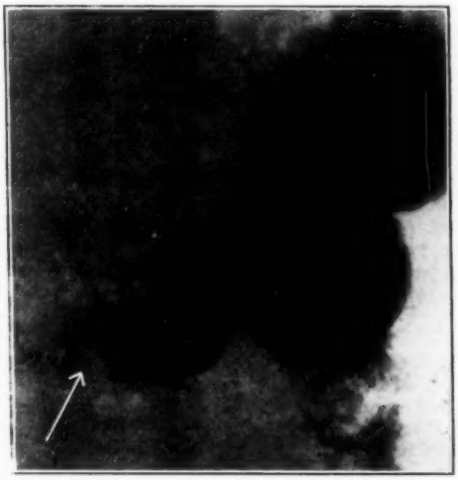
there was definite thickening of the pyloric end of the stomach with a polypoid growth 2 cm. in diameter projecting into the pyloric antrum, and a large deep irregular ulcer two inches from the pylorus. There were small enlarged glands in the mesentery and gastro-colic omentum. The liver looked normal. Partial gastrectomy had to be done, as a one-stage operation, with restoration of the continuity of the gut by an end-to-side anastomosis with the jejunum, as in Polya's gastrectomy.

After an uneventful convalescence of three weeks a fractional test-meal showed an absence of free acid from all specimens and a low total acidity (see Fig. 2). The absence of free acid from all the specimens was probably due to removal of part of the stomach, but not necessarily, as it could have been due to regurgitation from the jejunum, which was shown by the presence of bile in all the fractions except the second. The patient was put on acid hydrochlor. dil. ℥30, suitably diluted, at meal times. He thought the acid suited him best at the end of his meals and was sure it aided his digestion and markedly increased his appetite. During the following fortnight his general health was much improved and on discharge on March 13th he looked very fit. Two months later he was in very good health and free from symptoms. His weight before operation was about 8 st. During three weeks at a convalescent home he gained 11 lb., and his weight three months after operation was 9½ st.

Section of the ulcer showed much fibrosis of the muscle coat. The papilloma was an adenomyxoma with down-growth of epithelium, but was not definitely malignant. The tumour was not eroded. The glands showed chronic inflammatory endothelial hyperplasia.

Mason and Dwyer [1] were impressed by the lack of gastric symptoms in their cases of benign tumours of the stomach. Their patients suffered from weakness, anæmia, and loss of weight. Diarrhœa was very persistent, and in one case practically the sole

FIG. 3.



Radiogram of stomach taken prone. The arrow indicates the position of the tumour.

complaint. Again, Moore [2] states that single endogastric polypi, not occluding the pylorus, non-ulcerated and without coexisting cancer, do not give rise to any symptoms, and that usually the coexisting cancer or ulcus causes the symptoms. Large tumours, extensively eroded or obstructing the pylorus, give rise to distress related or unrelated to food, weakness, vomiting, hæmatemesis, and melæna. In the gastric contents hydrochloric acid is not found and there is an increase in mucus. The symptoms when pronounced are suggestive of gastric carcinoma or ulcus.

"The ball-valve syndrome," described by Eliason and Wright [3] as typical of pedunculated tumours of the stomach situated near the pylorus, appears to have been present in some degree in the case described above. The syndrome, due to temporary enveloping of the tumour by the pylorus, is characterised by repeated paroxysmal spasmodic attacks of gastric pain accompanied by temporary prostration, anorexia, anæmia, hæmatemesis or melæna, and rapid loss of weight. Later the symptoms subside and there is rapid improvement in health until another attack occurs.

Fig. 3 shows the situation of the polypus near the pylorus. Moore gives the following points in the radiological diagnosis of benign tumours; they usually produce a filling defect, which is centrally situated

and clearly circumscribed, does not distort the rugæ, interfere with peristalsis, or obstruct the pylorus unless situated in the antrum, and does not cause spasm or contraction of the stomach. Balfour [4] writes that the differential diagnosis of benign tumours of the stomach is almost entirely dependent on X ray examination. Of his cases, 58 in number, three-quarters were radiographed, and in over 90 per cent. the lesion was revealed.

Eliason and Wright,[3] in their series of benign tumours of the stomach, record a case where a pedunculated papilloma occurred with a gastric ulcer. The papilloma, situated on the anterior wall of the stomach, was 1·5 cm. long and was found in a female, aged 26, who had symptoms of a duodenal ulcer.

I have to thank Mr. Waugh, under whose care the case was, for permission to publish it, and Dr. Gage and Dr. Lane for the radiogram and pathological reports.

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BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN WINNIPEG.

(*Continued from p. 698.*)

SECTION OF PATHOLOGY AND BACTERIOLOGY.

AT the third session of this Section, with Prof. M. J. STEWART in the chair, Prof. WILLIAM BOYD (Winnipeg) read a paper on

The Glioma Group of Tumours.

The most important contribution of recent years, he said, was the classification suggested by Bailey and Cushing, as the result of study of a large collection of brain tumours by means of the methods devised by Cajal, Hortega, and other members of the Spanish school of neurohistologists. This study showed that 14 subgroups might be differentiated; the tumours in each of these subgroups were composed for the most part of one type of cell met with during the development of the brain. Though the type of cell was best recognised by gold and silver staining, it was the speaker's object to show that the more important types of tumour could be recognised by ordinary histological methods. In addition to hæmatoxylin and eosin, however, Mallory's phosphotungstic acid hæmatoxylin should always be used, since it stained both the neuroglia fibrils and many of the protoplasmic prolongations of the cells.

After reviewing the histology of the developing nervous system, Prof. Boyd recorded his own study of 31 gliomata obtained in the post-mortem room. These tumours fell into the following groups: astrocytoma, 16; spongioblastoma, 9; medulloblastoma, 3; ependymoma, 1; astroblastoma, 1; and unclassified, 1. It was noteworthy that all these tumours had arisen from the astroglia. Dealing with each type of tumour in turn, he said that the astrocytoma was of slow growth and was clinically benign; it occurred both in the cerebrum and the cerebellum, and was not well demarcated from the surrounding tissues; cyst formation was very common, and it was clear that many cerebellar cysts owed their origin to this type of tumour; calcification was of frequent occurrence. The spongioblastoma multiforme was large, often hæmorrhagic, and typically malignant; it was generally confined to the cerebral hemispheres, and consisted histologically of cells of multiform appearance; endothelial hyperplasia was common both in the tumour and in the surrounding tissue. The medulloblastoma occurred chiefly in children, and was commonly situated in the roof of the fourth ventricle; it tended to invade the subarachnoid space, and was highly malignant; the cells resembled those of a round cell sarcoma. The ependymoma consisted of well-differentiated cells; it was of slow growth and low malignancy. The astroblastoma was characterised by the perivascular distribution of its cells.

Prof. WILDER PENFIELD (Montreal) emphasised the importance to the surgeon of this pathological classification; it assisted him greatly in determining which type of case was suitable for operation, and in the ultimate prognosis.

Glomic Tumour of Forearm.

Dr. CHARLES SIMARD (Montreal) described a case of glomic tumour of the forearm. These tumours, which were of uncommon occurrence, were first described by Prof. Masson in 1924. Their most frequent site was under the nail or in the finger pulp, but occasionally they were found in other areas of the body. The subungual tumours were small, bluish in colour, and were accompanied by piercing, almost unbearable pain. Histologically the tumour had a superficial resemblance to an angioma; but in addition to the vessels there were fusiform and epithelioid cells, and numerous nerves of the myelinised and sympathetic type. It was probable that these tumours arose from the glomus apparatus, which occurred under the nail and in the Luschka gland of the coccyx. This apparatus consisted of vessels, surrounded by epithelioid cells and nerves, and was believed to be a regulator of the peripheral circulation.

Prof. J. H. TEACHER (Glasgow) read a paper on the

Physiology and Pathology of the Endometrium.

His remarks were largely confined to an interpretation of a number of lantern slides. He said that though the menstrual cycle was commonly supposed to be governed by the corpus luteum, it was clear that menstruation might occur in the absence of ovulation. The presence of a corpus luteum was indicative merely of ovulation with or without subsequent implantation on the endometrium. He was of the opinion that in the human subject menstruation normally occurred in regular cycles, while ovulation occurred at irregular intervals.

Prof. J. B. COLLIP (Montreal) took pains to emphasise that the α or œstral phase and the β or corpus luteum phase in human beings were different. The placental hormone could be obtained only from the human placenta; it was not present in lower animals. Dysmenorrhœa was associated clinically with the corpus luteum; at the beginning of menstruation it did not occur, because for the first few cycles after puberty the ova which were produced were not associated with a corpus luteum and were therefore non-fertile.

Intra-epithelial Growth of Carcinoma.

Prof. ROBERT MUIR (Glasgow) pointed out that the essential neoplastic change occurs first in epithelium which still has normal relationships to connective tissue, and that the break-through of basement membranes or of other normal boundaries follows on the acquisition of malignant properties by the cells. The growth and extension of cancer cells in the

epidermis might be met with in three circumstances: (*a*) The cancer cells might reach the normal epidermis by direct spread from an underlying growth, thereafter extending within the epidermis. This was occasionally seen in connexion with the nipple and in cases of skin melanoma. (*b*) The cancer cells might reach the epidermis by continuous growth from the duct of a gland opening on the surface. The outstanding example of this was Paget's disease of the nipple occurring secondarily to intra-duct carcinoma. In the early stages of the malignant change in the ducts the growth was of the intra-epithelial type, leading often to a layer of new growth of considerable thickness; but later the cells broke through the surface layer with the result that the ducts became filled with masses of cancer cells. Intra-epithelial growth might also be observed in the acini. Both in the ducts and in the acini the intra-epithelial growth might be widespread, and the disease might originate in multiple foci as well as spread directly. (*c*) The cancer might start in the epidermis itself and spread within it, instead of infiltrating the subjacent tissue as was usually the case. In some apparent instances of this the point of origin might be in the skin appendages. As examples might be cited Paget's disease occurring in extramammary sites, and probably Bowen's disease.

In all the three circumstances cited the growth of the cancer cells in the epidermis apparently met with considerable difficulty and was therefore relatively slow; in fact it would appear that it was only in the deeper parts of the epidermis that active growth could occur at all. Sometimes the cancer cells could be found only singly or in small clumps, and nearly all in a more or less degenerated condition. But in certain cases all intermediate stages could be met with between such degenerated cells and masses of cells that presented the features of cancer cells and were undergoing active mitotic division. The cells in the epidermis were restrained from breaking through this tissue and infiltrating the cutis; he said that he had, in fact, never seen a clear example of re-passage from the epidermis to the connective tissue, though the possibility of this occurrence could not be excluded.

The growth of cancer cells in the epidermis led to a definite reaction in the cutis characterised by the formation of new capillaries and an extensive infiltration with leucocytes, plasma cells, and occasionally eosinophils. When the growth within the epidermis was discontinuous, a definite relationship might be recognised between the affection of the epidermis and the underlying cellular reaction.

Phosphatase of the Blood Plasma in Bone Dystrophies.

Prof. H. D. KAY (Toronto) said that phosphatase was the only intracellular enzyme about which much was known. There were numerous phosphoric esters in the body, many of which were capable of forming soluble salts of calcium. The action of phosphatase was to hydrolyse these salts, and convert them into the insoluble calcium phosphate. In normal plasma there was a small quantity of phosphatase, equivalent to about 0·15 unit. This quantity was greatly increased in bone dystrophies, such as fragilitas ossium, rickets, osteitis fibrosa, osteomalacia, osteitis deformans, and advanced secondary carcinoma of bone. A marked rise in phosphatase was confined almost exclusively to bone disease, and was apparently a phenomenon which occurred secondarily to the development of the lesion.

Coal-miner's Lung.

Prof. S. LYLE CUMMINS (Cardiff) reported on a series of 38 post-mortem examinations of coal-miner's lung. He considered that anthracosis occurred especially in lungs which were silicotic, and in which the lymph vessels had been largely occluded by fibrous tissue. In normal lungs silica formed only about 1 per cent. of the ash. In one series of his cases, which had not been attended by lung symptoms during life, the silica formed 5 to 20 per cent. of the ash; while in another series, which had been accompanied by clinical symptoms, it reached a figure of between 25 and 42 per cent. The relation between the amount of carbon and of silica in the lungs was very close. He pointed out that in coal-miners silicosis did not seem to predispose to tuberculosis in the same way as it did in gold-miners. Another point of interest was that caseous tuberculous lesions did not tend to break down in anthracotic lungs; hence the sputum was often negative.

SECTIONS OF TUBERCULOSIS AND DISEASES OF CHILDREN.

A DISCUSSION in the combined sessions was opened by Dr. MAURICE MCPHEDRAN (Philadelphia) with a paper on Some Aspects of Prevention of

Tuberculosis in Children.

The interaction of seed and soil, of infecting organism and host, produced, he said, a baffling and complex disease. For those investigating the pathogenesis, epidemiology, and clinical manifestations of pulmonary tuberculosis, the dominant considerations were, he thought, the duration and intensity of infection or contagion, and the factors of race and age. He showed slides of pulmonary lesions in childhood and adolescence, and discussed their significance and correlation with each other. To get an accurate idea of the constitution, relation, and course of these lesions it was essential to make serial and multi-angular examinations—sometimes stereoscopic ones. X ray exploration of the living lung must be interpreted in terms of pathological study of the excised inflated lung. This brought out the necessity for revising the present criteria of activity. It was obvious that there could be progressive pulmonary lesions without clinical symptoms. The sedimentation reaction sometimes gave confirmatory evidence, but such changes might be transient. Non-tuberculous infiltrations involving one-third of both lungs at the base might give rise to severe symptoms and yet clear up very quickly.

THE PRIMARY FOCUS.

Dr. DAVID NABARRO (London), who read a paper on mediastinal tuberculosis in children, recalled the pioneer work of Parrot (1876) and that of Küss, Hutinel, and Ghon. The primary focus was, he said, at least as old as that of the lesions in the mediastinal glands, but fresh lesions might occur in the lungs, at first close to, later spreading further from, the primary focus; these must not be confused with the original focus. In a consecutive series of post-mortem examinations made from 1927–29 on children under the age of 12 years at Ormond-street Hospital, 67 (or 15·8 per cent.) showed evidence of tuberculous disease, while 55 per cent. of the 67 cases showed what he believed to be the primary lung focus; 14 cases were obviously primary abdominal; 3 showed tabes mesenterica; and 10 were cases of pulmonary tuberculosis in which no lung focus could

be isolated with certainty. In the whole series of cases there was only one in which a primary lung focus was unaccompanied by obvious changes in the mediastinal glands. And yet he had come across no case in which a primary lung focus had been diagnosed during life; the shadow of a focus near the hilum would be obscured by that of the adjacent glands. Shadows might depend upon the calcium content of the lesion, and observations were being made upon this point.

BACTERIOLOGY.

Dr. R. M. PRICE (Toronto) read a paper on the bacteriology of tuberculosis in children. All three types of tubercle bacilli—human, bovine, and avian—were, she said, found in children, the first being the most important. Bovine infection was conveyed to children through infected milk. Avian infection was occasional. The relative frequency of the different types was being studied at the University of Toronto in children under 14 years of age. Of 65 cases of medical tuberculosis (45 meningeal, 20 pulmonary) all but two were due to the human type; of 75 cases of bone and joint tuberculosis all but three were of this type; of 30 cases of cervical adenitis, 17 were of human and 13 of bovine type; of 20 cases of renal tuberculosis, all but two were of human type. Tuberculosis of tonsils showed six human, three bovine; of adenoid tissue, four human and one bovine; of peritoneum and mesentery, one each, both bovine. One case of generalised glandular tuberculosis was of avian type. In the majority of the 87·3 per cent. of cases of human bacillus infection a history of contact with pulmonary tuberculosis was obtained, most of these showing also evidence of tracheobronchial or pulmonary disease. The 26 cases of infection of bovine type, the youngest an infant of 5 months and the oldest 12 years, without exception came into Toronto from towns and villages in Ontario where pasteurisation of milk was not carried out, every child in the group having been fed on raw milk. In the city of Toronto, where pasteurisation was compulsory and had been rigidly enforced since 1915, not a single case of bovine infection was encountered.

PREVENTION.

Dr. W. J. DOBBIE (Weston, Ontario) spoke on the need for more adequate measures of prevention. While there had been during the past 30 years a marked reduction in the mortality from tuberculosis in the United States and in Canada, it was not so clear, he said, that there had been a similar decline in the infection-rate. Could anything be done now to prevent the infants and young children of to-day from requiring treatment for tuberculosis in 25 to 30 years' time? The failure in preventive treatment was not so much a lack of knowledge as the omission to apply it actively and persistently. In the emphasis now being placed on original research lay a danger of laxity in the application of knowledge already attained. Since tuberculosis of the bovine type was not yet a negligible factor in morbidity, the first maxim in prevention was to pasteurise milk whenever possible; to boil any milk not properly pasteurised before its use as food; and to produce other milk products under such conditions that there was no danger of transmitting disease. With regard to infection with human type, there was ample evidence of the need for some adequate measure to protect young children whose whole world, for practical purposes, lay within the confines of the home. The second maxim then was that no child under 16 should live in the same home as that occupied by a person suffering from active or open pulmonary tuberculosis, or in which there was a possible contact with a tuberculous person. A third maxim was that measures should be taken to prevent expectoration in public places, and that educational propaganda to this end should be continuously employed. This would prevent the street, which was the playground for so large a proportion of children, from being a source of infection to children over three. Other precautions included an efficient system of medical inspection in schools—no person having tuberculosis should be employed in any school building in any capacity whatever except in a special class or school for tuberculous children—and prolonged treatment of tuberculous children. Public health education would seem to be the chief hope until some practicable method of vaccination had been approved for general application.

PASTEURISATION OF MILK.

Dr. H. C. PARSONS (Toronto) said the necessity for pasteurisation was shown by the presence of tubercle bacilli in milk to the extent of from 14 to 20 per cent. of the samples examined, and by the proved transmission of tuberculosis to man as a disabling or fatal disease. The ideal would be the provision of pure tuberculosis-free herds, but since this could not be yet, some form of safe control of an infected milk-supply was essential in the meanwhile. Pasteurisation provided this control, as was proved by the presence of tubercle bacilli in the milk before pasteurisation and their absence afterwards. Winslow and Gray, who compared the tuberculosis mortality in five-year periods before and after pasteurisation was introduced in Toronto, found no change in the mortality from pulmonary tuberculosis at all ages, but in the age-period 1–4 years a reduction in the mortality from non-pulmonary tuberculosis proportionate to the extent and efficiency of the pasteurisation. The records of the Hospital for Sick Children showed a similar reduction by one half. Analysis showed that in 1911–15 cases from the city amounted to 84·3 per cent., and from the country 15·7 per cent. In 1924–28 the corresponding figures were 54·2 and 45·8 per cent. So that in the latter period 45·8 per cent. of the cases did not come from a pasteurised area. It was during this second period that the material for Dr. Price's work was supplied. Pasteurisation, said Dr. Parsons, did no harm to the milk; if by some mischance a few vitamins were destroyed they could readily be replaced. With a properly supervised system, however, such errors should not occur. The keeping qualities of milk were improved by pasteurisation, and other infections such as typhoid, scarlet fever, diphtheria, and septic throats could be controlled.

HOUSEHOLD INFECTION.

Dr. BRUCE CHOWN (Winnipeg) said that the ætiological agent as far as pulmonary tuberculosis in young children was concerned was the human tubercle bacillus—i.e., household infection. Its main source was the family. In early cases there were no general symptoms; most of the children were well nourished. There were also, as a rule, no local symptoms; cough and fever were uncommon. The three major points in diagnosis were: history of contact, tuberculin reaction (intracutaneous), and the skiagram. Of these, the latter was all-important, provided the plates were good. If the tuberculin test was positive no child could be said to be non-tuberculous until carefully X rayed. Prognosis was better than it used to be; increasing emphasis should be laid on prevention of reinfection.

Dr. J. A. JARRY (Montreal) said the problem of the dwelling in the spread of tuberculosis was contemporary with the abnormal and rapid growth of cities. A survey of 1256 cases of tuberculosis in Montreal, 1080 being in their own homes, the others living in refuges or boarding-houses, indicated that the foremost problem was family contamination; there was a high percentage of malnutrition among children living with tuberculous relatives. Both these dominating problems were dependent for their solution on the education of the people and the protection of childhood.

DISCUSSION.

In the discussion Dr. POTTENGER remarked that many rapid infections took place in areas in the lung in which there had been a previous infection. Sensitivity and allergy were, he believed, steps towards a complete immunity. The essence of the whole picture of tuberculosis was that it began in childhood. Dr. LAWRENCE (Trinidad), who had been in practice in the tropics for about forty years, said that their problems were different. There was almost no bovine tuberculosis, though they had much tuberculous adenitis. Joint tuberculosis was also rare. He endorsed Dr. Chown's views on family tuberculosis, laying much stress on the housing problem, and advocating segregation of open cases. Dr. A. TRIMBLE (Belfast) said that from the speeches listened to there was apparently no place for the stethoscope. He would like to have heard more about treatment. Removing the child from the source of infection was not treatment. There was room for work to be done on the effect of tuberculin on the blood picture. Dr. VROOMAN (Vancouver) said that for the last few years they had had a tuberculosis-free area for cattle, but they were still pasteurising most of their milk. He drew attention to the increasing prevalence of tuberculosis in the young adult. Dr. HOLBROOK thought that every school-child should have a tuberculin test every year until it was positive. Dr. F. J. COUTTS (London) also referred to the increased tuberculosis morbidity in young women, and asked whether it was certain that the modern careful treatment of children with minimal disease did not lead to increased chance of disease in later years.

Dr. MCPHEDRAN, closing the discussion, said that the fundamental point of the whole problem of diagnosis was the X ray, which was the key to approach even problems of pathogenesis and epidemiology. A child with ill-defined lesions in the lung was in danger of breaking down; and an adolescent lesion that did not remain stable for at least a year needed hospitalisation.

SECTIONS OF MEDICINE AND NEUROLOGY.

Lord DAWSON took the chair at a joint meeting of the two Sections when Sir FARQUHAR BUZZARD (Oxford) opened a discussion on

Acute Poliomyelitis.

It was fitting, he said, to discuss this disease in Canada because of the recent epidemics there, and the commendable activity of the Canadian medical men. Outbreaks in various provinces had been met by the organised employment of modern methods of treatment, but there were still gaps in our scientific knowledge. While respiratory droplet transmission was a possible but uncommon mode of spread, he felt that before more of value could be discovered on this point we required to have a method of testing individual immunity. Attempts had been made to trace the source of epidemics to infected water and milk-supplies. He did not believe that water was seriously under suspicion. Milk, however, had been proved to be a factor in the development of epidemics. It was through a study of immunity that we should be led to establish preventive measures. We needed to determine whether poliomyelitis was a localised disease of the pharynx and tonsils or a general infection; in the first case the nervous involvements would depend upon the circulation of toxins, in the second case upon the actual attack of the virus on the tissue. It was noteworthy that the virus did not flourish in the blood stream. The steps to be taken when an outbreak occurred in an institution would be simplified if J. Collier's claim, that the infection is through carriers and that all exposed individuals are infected at the same time, were accepted. There was, however, no general agreement about this. Detection and control of carriers was, however, without doubt the most important step in preventing spread. In spite of the excellent work of Flexner and Noguchi, the nature of the causative agent was not well known. The use of convalescent serum therapy, he felt, lacked the authoritative claim of a well-tried weapon. Advance was unlikely until we had discovered a biological test which would give an early diagnosis, and Sir Farquhar concluded by commending the search for it to the bacteriologist.

CONVALESCENT SERUM.

Prof. H. B. CUSHING (Montreal) said there were three arguments for the use of convalescent serum in acute poliomyelitis: (1) the argument from analogy with other diseases, which he felt to be of dubious potency; (2) animal experimentation—here the results were conclusive both for prophylaxis and treatment; (3) clinical results; although these were not as conclusive as in animal experimentation, those who had used the treatment most were its strongest advocates. There were, he said, limitations to this form of treatment: (1) The passive immunity produced lasted only three weeks. (2) Treatment was only of value if given during the preparalytic stage. (3) The difficulty of procuring a serum which was not on the market. Owing to these limitations many text-books stated that convalescent serum therapy was only practicable during an epidemic, a view with which he heartily disagreed. Every medical man, he considered, should see to it that a supply of serum was at hand.

Dr. J. M. MCEACHERN (Winnipeg) spoke of the use of convalescent serum in the Manitoba epidemic of 1928. His conclusion was that this treatment should be put in general use, even though it involved a diagnosis in the preparalytic stage.

Dr. GEORGE RIDDOCH (London) admitted hesitation in employing this treatment, but he now felt convinced of its usefulness. He questioned, however, the advisability of introducing the serum into the subarachnoid space.

VALUE OF REST.

Mr. ALEXANDER GIBSON (Winnipeg), speaking as an orthopædic surgeon, emphasised the necessity for complete rest during the period of recovery. He deprecated the tendency to apply massage too ardently, and suggested that light skin stroking was preferable. He had no use for electrical stimulation. He spoke of the advances made in the stabilisation of various joints.

Dr. R. G. ARMOUR (Toronto) was impressed with the high incidence of gastro-intestinal upsets during the prodromal stage. He believed that prompt purgation decreased the liability to severe permanent

damage. He emphasised the value of rest, and said that the only cases he had seen in which the severity of the paralysis had increased, after 48 hours following its onset, had been active during that period.

EARLY DIAGNOSIS.

The Chairman (Dr. E. I. SPRIGGS, Ruthin) then expressed a desire for information regarding the early diagnosis of acute poliomyelitis, and called on Dr. MCEACHERN, who outlined the signs and symptoms as seen in the Manitoba epidemic. The prostration, he said, was usually greater than the temperature and pulse would suggest. The patient frequently seemed dazed; there was slight rigidity of the neck and definite rigidity of the back. Kernig's sign was not marked. Abdominal reflexes were often absent but might be exaggerated; knee-jerks were absent in 32 per cent. of cases. The tâche cérébrale was almost always present. Gastro-intestinal upsets were common. Spinal fluid examination revealed the presence of cells up to an extreme limit of 2000 per c.mm. At first the cells were polymorphonuclears, but these were replaced by lymphocytes at a later stage. The globulin-content was increased.

REPLY.

Sir FARQUHAR BUZZARD agreed that it was necessary to be forearmed against epidemics. He still thought that crucial diagnostic tests were wanting, but admitted there was much to be hoped for from the use of convalescent serum. He agreed with Dr. Gibson's remarks on massage and electrical stimulation. He advocated swimming as a valuable form of exercise in the stage of repair.

REVIEWS AND NOTICES OF BOOKS

Osler's Principles and Practice of Medicine.

Eleventh edition. Revised by THOMAS MCCRAE, M.D., F.R.C.P. Lond., Professor of Medicine, Jefferson Medical College, Philadelphia; Physician to the Jefferson and Pennsylvania Hospitals, Philadelphia; formerly Associate Professor of Medicine, Johns Hopkins University. London: D. Appleton and Co. 1930. Pp. 1237. 30*s*.

THE task which Dr. McCrae has to face each time he brings out a new edition of this work must grow more embarrassing with the passing of the years since Osler's death. The vast reputation and world-wide popularity must depend largely on the retention of the personal note. Dr. McCrae has succeeded in keeping to Osler's style and outlook despite the fact that some sections have had to be very considerably revised and in parts rewritten. The most important alterations have been made in the section on nephritis in general. Hæmorrhagic nephritis is introduced and described for the first time in these pages as a clinical entity; the old term chronic parenchymatous nephritis is now discarded in favour of the much more accurate and descriptive title chronic nephritis with œdema. More attention is paid to nephrosis, and lipoid nephrosis is discussed in some detail, taking the place of a rather indefinite condition which up to now has been called toxic kidney. Considerable changes have been made also in the pages on purpura, which is now classified in terms of platelets—namely, thrombopenic or non-thrombopenic. It is interesting to see the clinical condition which formerly used to be known as purpura rheumatica included and amplified in the disease now given the title of anaphylactoid purpura. Minor additions are made to the section on the treatment of syphilis, bismuth and fever therapy being added; slight alterations are to be noted in the sections on diabetes mellitus, cardiospasm, and elsewhere. Cardiac asthma is included for the first time in this edition, but there is no mention of venesection in the treatment of this condition—a regrettable omission. Among important new diseases included for the first time are hypoglycæmia, subacute leukæmia, post-vaccinal encephalitis, and myelophthisic splenomegaly. The paragraphs on such obscure diseases as melioidosis and lipoid histiocytosis are too scrappy to be of value.

Despite the changes necessary to bring this great work up to date, Osler remains to a large extent Osler, and as such the most readable text-book of medicine.

Anatomie médico-chirurgicale de l'abdomen: la région thoraco-abdominale.

Third edition. By RAYMOND GREGOIRE, Professeur agrégé à la Faculté de Médecine de Paris. Paris: J. B. Baillière et Fils. 1930. Pp. 188. Fr.45.

THIS book, the first volume of Prof. Gregoire's series of monographs on the medico-surgical anatomy of the abdomen, is a thoroughly sound and very interesting work. Beginning with a description in detail of the thoracic wall covering the upper abdomen and of the diaphragm, the author proceeds to deal with the viscera covered by these structures—the liver, stomach, pancreatico-duodenal complex, spleen, with all their peritoneal and other connexions and relations. In all these matters Prof. Gregoire exhibits the lucid powers of simple description which distinguish his writings, and, in addition to the cadaveric anatomy which forms the basis of all such work, has brought in the consideration of the various organs from the clinical and operative points of view, with radioscopic references and other details of living anatomy. His book is thus of great value to the medical man who has to deal with diagnosis and treatment within this region. Although in many ways the author disagrees with the classical anatomical descriptions, he gives the reasons for his opinions, and not many modern anatomists will fail to support his views. We notice that Prof. Gregoire describes the stomach as supported or suspended by a "suspensory ligament," comparable with that attaching the liver to the diaphragm between the two layers of the coronary ligament, and made of fine fibrous tissue with a certain amount of interposed fat; it passes from the lower aspect of the left leaflet and pillar of the diaphragm to the upper and back aspect of the fundus and upper end. This structure is certainly (at the least) a frequent feature, and we fancy that many who observe it class it among the "pathological" adhesions, whereas Prof. Gregoire looks upon it as a physiological development; it would seem, on the whole, that the latter view is the more justifiable. The presence of this attachment certainly accounts for the constant position of the fundus, while the remainder of the stomach moves with the changing position of the subject. We cannot agree, however, with the description of the retropancreatic bands or layers, which include the band of Treitz, for the developmental ground on which the description is based is schematic and, in our view, incorrect. To

make the band of Treitz, for example, owe its formation to the fusion of peritoneal layers is not in accord with the actual facts, for this band is clearly formed long before these layers—between which it lies—are even in actual contact. This, from the clinical point of view, is a matter of little moment and is almost (if not altogether) the only statement in the book with which we seriously disagree. The descriptions of vessels are excellent, and the whole work is one which can be read with advantage by any medical man, whether he is an anatomist or a practical clinician. He will find in it many things which he may not know, and will discover that there are ways of looking at anatomical matters which differ from those to which he is accustomed.

Bowlby and Andrewes' Surgical Pathology and Morbid Anatomy.

Eighth edition. By GEOFFREY KEYNES, M.A., M.D., F.R.C.S., Assistant Surgeon, St. Bartholomew's Hospital. London: J. and A. Churchill. 1930. Pp. 644. 21*s*.

"Bowlby's Surgical Pathology" was originally written 43 years ago. It has been frequently revised during this long period, and up to the last edition in 1920 the late Sir Anthony Bowlby took an active part in its production. It is thus not remarkable that the book retained in many respects its old character, being based upon a conception of surgical pathology and views of what is essential and basic in the science which are notably different from those in vogue to-day. Mr. Keynes was faced with a difficult problem in undertaking the revision of such a book. Judged from the point of view of maintaining the traditions of the old book he has been strikingly successful, but the attempt to introduce the modern outlook of the surgical pathologist has not been very energetically pursued The surgeon has become more and more a physiologist as well as an anatomist. He has returned to the ideals of John Hunter, he has become more alive to the importance of the intricate vital processes which his gross interference with the structure of the body so profoundly disturbs. Glimpses of what this book might have meant to the elementary student can be gathered by reading for instance the succinct account of surgical shock, but how is it that a description of the union of fractures can appear without the mention of the part played by osteoblasts or osteoclasts, nor a definition or description of osteoid tissue? If a student is to read a separate volume of this size in addition to his text-book of surgery he should be provided with better accounts of what is known of calculus formation or a more credible one of the pathology of urinary back-pressure. Again, in the chapter on genito-urinary tuberculosis, having said that the primary lesion in this tract is usually in the kidney or epididymis, the author immediately proceeds to describe the morbid changes in the bladder, and then those in the ureters, before writing of the important primary lesion in the kidney. This arrangement, of a past age, is calculated to give the student a wrong perspective of the disease. The author has, obviously, been fettered by the construction of the forerunning editions. It is to be hoped that a new edition will be speedily demanded in order that the author may make alterations which will make this otherwise well-written, accurate and readable book conform to the modern outlook.

Alimentary Anaphylaxis.

Gastro-intestinal Food Allergy. By GUY LAROCHE, CHARLES RICHET Fils, and FRANÇOIS SAINT-GIRONS. Foreword by Prof. CHARLES RICHET, Faculty of Medicine, Paris. Translated by MILDRED P. ROWE and ALBERT H. ROWE. University of California Press. 1930. Pp. 139. 9*s*.

THE title of this little book is itself challenging. The translator says in his preface "The authors have used 'anaphylaxis' for 'allergy' as it is used in this country" (i.e., U.S.A.). The French authors define alimentary anaphylaxis (page 27) as "all the reactions arising from a second ingestion of wholesome and normally well-tolerated foods which, when first ingested, give mild or no reactions whatever." That definition will serve well enough for orthodox anaphylaxis, but will it serve for all that American authors mean by allergy? The French authors then go on to describe hereditary sensitivities (page 74) which are easily recognised as allergy; these are not in accordance with our ideas of orthodox anaphylaxis. Moreover, in their chapter on diagnosis (page 122) they say "it becomes necessary to try to differentiate anaphylaxis from the intolerance that certain subjects have for certain foods"—i.e., between anaphylaxis and allergy. The main defect of this book to the British eye seems to be a failure to make identical (or to distinguish between) "anaphylaxis" which we know as chiefly a disease of animals, and "allergy" which is chiefly, possibly entirely, a disease of human beings.

French work on the subject of allergy or the toxic idiopathies has remained curiously isolated from work in other countries; it is all the more necessary, therefore, to get a clear idea of what has been done in France, and the book gives that very well, though the work of Widal and his school on hæmoclasis is, perhaps, under-represented, being dealt with in a chapter of less than two small pages. There is some elaborate speculation on pathogenesis; nine suggestions are put forward of the probable cause, with "undue permeability of the mucous membrane to unaltered proteins" as the favourite; no mention is made of the Prausnitz reaction and of the evidence it affords that unaltered proteins pass through the gut wall of every one of us. The cases quoted of "alimentary anaphylaxis" are extremely interesting; they read as if they had been carefully reported, regardless of whether they illustrate or undermine the author's theories and definitions.

In a long preface Mr. Rowe makes clear the American reaction to the French point of view.

Public Health Aspects of Dental Decay in Children.

By RAYMOND FRANZEN, Ph.D., Director of Research, Health Study, American Child Health Association. New York: American Child Health Association. 1930. Pp. 121.

THIS monograph, which is one of a series published by the above association, is an attempt to evaluate some of the factors connected with dental hygiene which may have a bearing on the public health aspects of dentistry. In this sense it is significant, for though much has been written on the dental treatment of school-children there is so far little realisation that public dentistry is not private dentistry on a larger scale, but involves different methods of approach, just as the tuberculosis problem as it affects the individual differs from the same problem affecting the population as a whole. Dr.

Franzen has set himself certain problems for investigation, such as the question whether the liability to dental caries operates on the organism with equal strength throughout lifetime or whether it is periodic. Is the liability to dental caries a function of the tooth or the organism? What effect have uncorrected enamel defects on the development of dental caries? At first sight it might seem that these questions, which have often been discussed from various angles, have no especial bearing on public dentistry. But a little reflection shows that they are cardinal problems and that their solution, were it possible, would affect materially the principles underlying school dentistry. A very large number of children were examined by skilled observers. Elaborate statistical methods were used which bring out some interesting points. Thus Dr. Franzen concludes from the evidence that the liability to dental decay is periodic, and that it is a function of the individual rather than of the tooth. On the important question whether there is any relation between uncorrected enamel defects and the development of dental caries the author's conclusions are significant. It is well known that the molars when they erupt often have crevices in the enamel. Experience shows that these often become the seat of caries and it has become the practice of many dentists to cut out all deep fissures and fill them, not because they are carious but as a prophylactic measure. Dr. T. P. Hyatt has gone further and advocates that all fissures, whether deep or not, should be invariably cut out as a routine practice. Such a measure takes time and involves some discomfort or even pain to the small child on whom it is performed. Franzen finds no evidence to support such a line of treatment as part of dental prophylaxis. It was not found possible to distinguish between the molars liable to decay on account of enamel defects and those not liable. First molars in children of 12, in whom these teeth had been present for at least six years, were found to have as much enamel defect as non-carious molars in children of six. The author argues that it is not sound treatment to undertake operative interference on many units merely because it prevents disease in some, and that more reliable criteria are needed before it is possible to distinguish between enamel defects which predispose to caries and those which are without influence on its incidence.

Those concerned in public dentistry should not overlook this monograph, which appears to us to indicate a line of study with many possibilities.

The Metabolism of Tumours.

Edited by OTTO WARBURG, Kaiser Wilhelm Institute for Biology, Berlin-Dahlem. Translated by FRANK DICKENS, M.A., Ph.D., Courtauld Institute of Biochemistry, Middlesex Hospital. London: Constable and Co., Ltd. 1930. Pp. 327. 40*s*.

WARBURG'S important work "Über den Stoffwechsel der Tumoren," published originally in 1926, has now been made available to a wider circle of students of biology by its translation into English. The book is a collection of papers from Prof. Warburg's laboratory dealing with biological oxidations, and more particularly with the peculiar metabolism of the cancer cell. The translation is excellent, and the English edition will make a strong appeal to all those who wish to use the manometric technique in the study of chemical reactions, since its theory and practice are described in great detail. Three papers from the German edition are omitted in the translation; a lecture giving Warburg's general views on the cancer problem at the date of publication, and two short papers dealing with iron estimations in tissues, and the checking of tumour glycolysis by synthetic colouring matters. Some more recent researches on metabolic problems are included, and an interesting introduction written by Warburg, in which he reviews his present outlook upon the cancer problem. Work from other laboratories has caused him somewhat to modify his earlier ideas. The essence of his present point of view is stated in the last paragraph of his introductory remarks. "Interference with the respiration in growing cells is, from the standpoint of the physiology of metabolism, the cause of tumours. If the respiration of a growing cell is disturbed, as a rule the cell dies. If it does not die, a tumour cell results. This is no theory, but a comprehensive summary of all the measurements at present available."

After Consulting Hours.

By CHRISTOPHER HOWARD, M.R.C.S., L.R.C.P. London: William Heinemann, Ltd. 1930. Pp. 283. 7*s*. 6*d*.

THIS book, written by a general practitioner, will give pleasure to any other of the same kidney who reads it. The author is evidently keenly interested in the numerous problems brought before him in practice and is not content merely to read the solutions offered by others. He likes to think out answers for himself, and fortunately for us he has put on paper many of his cogitations. They show him to be a man of ideas, thoroughly up to date in medical knowledge, and possessed both of a sense of humour and a capital style of writing. We get also the impression of a practitioner who is both a kindly adviser and a complete man of the world with a critical appreciation of old brandy. He goes so far as to give an expert prescription for the making of that "napoleon brandy" which is so often offered to those who do not know any better. The book contains eight different chapters of "reflections" of which, perhaps, the most enjoyable are the general ones. Here we find some illuminating remarks on the treatment of the chronic alcoholic, on how to behave as regards drink when you visit America, on constipation, endocrinology, and spiritualism. The two last Mr. Howard brackets as "the most important things that are being discussed and worked out to-day," and whether or not one agrees with this judgment, his arguments are potent in support of it. The writer is amusing and much to the point in what he says of phobias, of flowers in nursing homes, of cocktails, and of beef extracts. He introduces us to anthomania and to business men who eat too many sweets. His remarks on sun bathing and on climate generally are entertaining, and we like especially this on "Como and Kenya, both of which are known to have a stimulating effect upon the nerves and the sexual organs. The comparison between the common factor in these two places . . . would be of interest." Mr. Howard is an expert on various injection treatments and writes of them in a way which will be of the utmost value to colleagues of less experience. Slight blemishes include the entitling of the chapters. "Some appendicular reflections," for example, we regard as a horrid and unmeaning phrase quite out of keeping with the author's general style. What did any appendix ever reflect unless, perhaps, a stercolith? And we suggest for the next edition the omission of the word hot before fomentation.

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THE LANCET.

LONDON: SATURDAY, OCTOBER 4, 1930.

CENTENARY OF THE BRITISH ASSOCIATION.

THE British Association for the Advancement of Science was founded in 1831. It purposes to celebrate its centenary next year by meeting for the first time in London, and the selection of General SMUTS to occupy the presidential chair on that occasion is an elegant summary of the aims, principles, and achievements of the Association during 100 years. Of the value of what it has done for the promotion of natural knowledge there cannot be two serious opinions, and if it does not now occupy quite the predominant place in the annual cycle of scientific progress that it did 50 years ago, the change is due to no deterioration of its own qualities, but to the great increase in the number of specialist congresses, conventions, and meetings in which particular branches of knowledge are cultivated.

The Association has, from the first, catered for all sorts of pure and some kinds of applied science, and it has always contemplated the interests of the amateur as well as the professional. Those who go to the meetings need not attend to their own subjects; greatly to their advantage, physicists may come to the sessions of the zoologist, and botanists listen to the economic geographers. Medical men are in a particularly advantageous position, for there is no section of medicine or even of pathology, and if they would attend the meetings in larger numbers than they do they would find that they could have an excellent busman's holiday as it were on a tram or a locomotive. This criss-crossing between the various compartments into which science has, for practical purposes necessarily, been divided is an achievement which those who love the progress of knowledge as a whole greatly desire; it is extremely difficult to do it at all effectively, but the British Association and the weekly *Nature* do more towards this end than any other enterprises in this country. One great change in the personnel of the meetings which has happened since the Association was founded is the increase in the relative preponderance of professional scientists as compared with amateur devotees. Professionalism and the possibility of careers in research have not proved an unmixed blessing; they have simply been inevitable. But they have, we may be grateful, by no means obliterated the amateurs. In absolute, if not in relative, numbers there are probably at least as many of them as there ever were, and the annual meetings of the Association give them an exceptional chance either as talkers or listeners to help in promoting the common good.

We are thankful therefore for what the Association has done in the past and we wish them all success in the future. And they have a special scheme in hand to celebrate their centenary which we commend to the goodwill of our readers. They desire to raise an endowment fund of £40,000 to be used mainly in three directions. In the first place money is needed towards the expenses of the annual gatherings, which at present are a considerable charge on the place in which they are held; this may sometimes prevent a meeting taking place in an otherwise suitable town, especially if it is far away in the Dominions. Secondly, money is needed by many of their committees which are charged with special inquiries. Under this heading there is no suggestion that workers should be paid; the Association has always been an organisation for the encouragement of voluntary work for the advancement of science. But many investigations cannot be undertaken without a considerable expenditure on materials and apparatus. And thirdly, further funds are desirable in order that the beneficent gift of Darwin's house, Down House, by Mr. BUCKSTON BROWNE, F.R.C.S., may be developed and realised as it should be. It is a good cause; the sum asked for is not immoderate as things go nowadays; we hope they may get it.

THE BEST SANATORIUM.

THE love of home being strongly marked in our race, the worst sanatorium, according to the firm belief of the patient, is usually the one in which he happens to be. This conclusion emerges from a recent exchange of view in our correspondence columns and would have become clearer the longer the correspondence continued. Individual impressions form no good guide for others, for they are determined largely by disposition or temperament. But there is a positive as well as a negative side to this. Every resort, as W. R. HUGGARD wrote in the last chapter of his "Handbook of Climatic Treatment," has a more or less individual stamp, almost a personality. This *genius loci* leads people either to abhor places wherein they have suffered hope deferred, or to visit again and again and to regard with affection places where they manage to get well without brooding over their physical woes. And then follows a paragraph by this wisest and wittiest of Irish physicians that might well be embroidered on the memory of everyone who has to deal with phthisical patients:—

> "Then the mental and emotional nature of the patient must be regarded. Has the patient resources in himself, and will the proposed health resort harmonise with his disposition? Some persons like a quiet, some a gay place, some are content anywhere. Some prefer to travel alone, and are wearied or irritated by compulsory association with strangers, some prefer company. Some require with them a guardian or caretaker; others, a companion; others again, a nurse; and others, a servant. One man may not be happy without his wife; another may not know what peace of mind is unless she is away. All these points have to be taken into account; and they can generally be divined or ascertained without intrusion into private family history."

Quantitatively, the choice of climate can never

be a large element in recovery from tuberculosis. At all times, and now more than ever, economic pressure makes it necessary for most people to get well as near home as possible, and there is comfort in the dictum that the healthy climate is one that offers frequent change from warmth to coolness and from sunshine to shade, or vice versa. If we accept, as most of us do, Dr. BURTON WOOD'S contention (p. 730) that the essential treatment for all forms of active tuberculosis is rest, it is not at the active stage of the disease that the particular kind of fresh air is of much moment. Anywhere will do where bed can be enjoyed for a long period with an easy mind. But if fresh air is not the primary need of the patient with active tuberculosis, it is the open-air habit of life that might have prevented him from getting tuberculosis and will keep him free from relapse after recovery. No one in the correspondence mentioned OTTO WALTHER, of Nordrach, which is the more surprising as it was through him that sanatorium treatment came to us in the form it did. BREHMER and DETTWEILER previously had dealt chiefly with advanced cases on institutional lines; there was a valetudinarian atmosphere throughout. WALTHER'S patients in the nineties were almost all English, with a large sprinkling of medical men and women who became pioneers of the hygienic treatment of tuberculosis in this country. His pupils gradually sloughed off the curious excrescences of Nordrach treatment. Their patients at Nordrach-on-Such and Such may at first have had to eat great slabs of beefsteak, and begin again if they turned against it; they may have been encouraged to walk through little streams on the way from dining-room to dormitory. But there is no doubt that the open-air life with its invigorating exposure to sun and air and wind is largely due to the genius of WALTHER'S teaching, which owed little to material equipment, for, beautiful as are the narrow valleys and tree-covered slopes of the Black Forest, the winter climate has little to recommend it, and we have it on record that boots grew mouldy in a single night. It is this habit of life which came from Nordrach that has spread little by little into the life of the community, and has opened unwilling bedroom windows, even in Harley-street.

And yet perhaps there may be a little more in the Alpine climate than the protagonist of home treatment may willingly admit. It can hardly be gainsaid that the dry wind-free sunny climate of the high altitude stations is a factor which England cannot provide. Witness thereto is the number of ex-patients who inhabit these stations just because they have found there the conditions which maintain their equilibrium. It is this which gives to Davos and Meran and Denver the appearance of sophistication; as in any other colony the acute and curable cases come and go, the experienced poitrinaires stay and accumulate. For this reason too we owe to these stations most of our comparative knowledge of methods of treatment. Local rest in the form of artificial pneumothorax has, in Dr. WOOD'S opinion, at least doubled the chance of recovery in pulmonary tuberculosis, and it would be ungenerous to forget that, while it was CARLO FORLANINI, of Pavia, who first advocated the treatment, and LUDOLPH BRAUER, of Hamburg, who used it years before it reached this country, it was at the hands of LUCIUS SPENGLER at the Schatzalp, Davos, that artificial collapse was first done under radiographic control and the technical difficulties were realised and surmounted. Everyone has at the end a spot of tubercle—the colloquialism is not ours but VIRCHOW'S—and PIRQUET made it certain that nearly every town child has played a match with the tubercle bacillus before reaching maturity. Natural methods, aided by common sense and reasonable parental care, have been successful in curing most of these. The best sanatorium then is one that follows most closely natural methods of cure.

THE ELECTROCARDIOGRAM.

GRAPHIC records of the electrical phenomena accompanying the heart-beat were obtained by WALLER in 1887, using the capillary electrometer, but it was not until some sixteen years later that the invention of the string galvanometer by EINTHOVEN made such records available for clinical purposes. EINTHOVEN'S galvanometer is not, as might be supposed, an extraordinarily sensitive instrument; more sensitive galvanometers are used for other purposes. The peculiar feature which renders it suitable for this particular type of work is its rapidity of movement. Instead of swinging slowly back to its base line it returns to zero remarkably quickly, and is therefore capable of recording a series of rapid changes of potential which a more slowly moving galvanometer would be incapable of following.

A series of rapid changes of electrical potential accompany each heart-beat, and can be demonstrated in the laboratory by means of a pair of non-polarisable electrodes placed on the surface of the exposed heart. Such a record is known as an electrogram. The clinical counterpart of this record—the electrocardiogram—is obtained by leading off from two points on the surface of the body. For the sake of convenience the points usually chosen are the hand and foot. In this procedure the tissues of the body behave as a fluid-conducting medium surrounding the active organ; the electrocardiogram may be compared to a record obtained in the laboratory from an exposed heart lying on a sheet of wet blotting-paper, the electrodes leading off to the galvanometer being connected, not to the organ itself, but to points on the blotting-paper situated at some distance from it. The various deflexions in the electrocardiogram are therefore indirect records of what is happening in the heart; they depict the electrical disturbances set up by the contraction of the heart in the surrounding medium. If one excludes the electrical disturbance accompanying auricular systole, the deflexions in the remaining part of the electrocardiogram may be divided into two groups. The first of these comprises a series of rapid deflexions of fairly large amplitude, and is known for convenience as the "Q R S complex."

It represents the electrical disturbance associated with the spread of the excitation wave through the ventricles. In records obtained from normal subjects the entire duration of this initial group of deflexions is not more than a tenth of a second. Then for a period which varies in accordance with the heart-rate and other factors the galvanometer records a straight line, the string remaining at rest in the zero position. Finally, the subsidence of the state of excitation in the ventricles is represented by a slow deflexion of smaller amplitude known as the T wave.

Under pathological conditions both the initial Q R S complex and the T wave exhibit certain characteristic deviations from the normal type. Before we are in a position to appreciate the significance of such variations it is obvious that we must understand the nature of the electrical disturbances which are responsible for producing the deflexions in the normal record. The arrangement of the muscle fibres in the heart is extremely complex, and for that reason physiologists have devoted their attention chiefly to the study of electrical phenomena in skeletal muscles; for in the case of skeletal muscle, cardiac muscle, and even nerve these phenomena appear to be essentially the same. It is well known that when a stimulus is applied to a strip of somatic muscle the part of the strip in which the excitation wave is traversing at any given moment becomes electronegative in relation to those parts of the strip which are in the resting state. Applying this observation to the heart the hypothesis was formulated that the direction of the deflexions in the Q R S complex signified activity in certain particular regions of the cardiac muscle, deflexions in one direction implying activity at the base of the heart, and in the other direction at the apex. This hypothesis was shown by LEWIS to be untenable, and the direction of the deflexions is now generally believed to be attributable not to the activity of one particular portion of the ventricular muscle but to the direction in which the wave of excitation is travelling at the moment. In a complex conducting system, such as the branches and ramifications of the bundle of His, it is clear that the wave of excitation must be travelling in many different directions at the same moment in different sections of the cardiac muscle. For example, if excitation is spreading upwards in muscle segments at the base of the heart, this will tend to produce an upward deflexion in lead II. of the electrocardiogram. But at the same time excitation may be spreading downwards in segments near the apex of the heart, and this will tend to deflect the galvanometer in the opposite direction. The form taken by the actual record therefore depends on the summation of these various factors, an upward movement signifying that for the moment the elements in which the wave of excitation is spreading upwards predominate over those in which it is spreading downwards.

A notable contribution to our knowledge of the electrical phenomena associated with muscular contraction has been made by Dr. W. H. CRAIB, an account of whose researches has just been published in the form of a monograph,[1] entitled "The Electrocardiogram," issued by the Medical Research Council. CRAIB points out that most of the classical experiments on the action current and allied phenomena accompanying muscular activity were performed on muscle, nerve, or heart preparations suspended *in air*, whereas in the living body the heart and other structures are deeply buried in a fluid-conducting medium, and not merely covered by a thin film of moisture. His experiments show that the quantity of fluid bathing a strip of muscular tissue exerts a profound influence upon the graphic record of the electrical response. Being unable to reconcile the type of response he obtained from tissues immersed in saline solution, with the old negativity hypothesis to which we have referred above, he has put forward a new idea in its place. Instead of concentrating attention entirely on the negativity of the active region, CRAIB suggests that equal emphasis should be attached to both anodal and cathodal regions between which a current flows in a conducting medium, such as an active tissue. He describes a large number of observations on the responses obtained from muscle strips immersed in saline, and finally applies the conclusions at which he has arrived to the interpretation of certain features observed in the electrocardiogram obtained from the mammalian heart. Further work on similar lines is likely to prove of value not merely to the physiologist but also to those who are faced with the still more complex problems presented by heart disease in man.

[1] H.M. Stationery Office. 1930. Pp. 57. 1s. 3d.

INTERNATIONAL LEAGUE AGAINST RHEUMATISM.—The second congress of this League took place Sept. 19th to 22nd, in Belgium and Holland, under the chairmanship of Dr. R. Fortescue Fox (President), Dr. N. M. J. Jitta (President of the Dutch Society), Prof. Labbé (Paris), and Prof. Graeff (Hamburg). The congress followed the Fifth International Congress on Physical Treatment, held at Liège, and both were largely attended by representatives of 14 countries, including many from England. At a joint session resolutions were unanimously passed calling upon medical faculties in all countries to include a course of instruction in physical treatment (theoretical and practical) in the curriculum of medical studies. The chief topic discussed by the League was Disorders of the Circulation in the Skin in Chronic Rheumatic Diseases. In an introductory paper Prof. Lunedei (Florence) described a method of recording skin temperatures and for examining the circulation in the skin. Prof. B. Prusik (Prague) read a paper on cutaneous capillaroscopy and the congestion test, Dr. J. van Breemen (Amsterdam) a short report on microcapillary appearances and low skin temperatures in rheumatic cases, and Dr. J. Foged (Copenhagen) on the general study of skin temperatures and circulation. Other papers, out of a total of 60 communications, were contributed by Prof. Kontchalovski (Moscow), Dr. Pap Lagos (Budapest), Prof. Bárány (Upsala), Dr. E. Kahlmeter (Stockholm), Dr. Brabant (Brussels) and Dr. Besse (Geneva), Dr. M. P. Weil (Paris), and Mdlle. de Putte (Liège). In Brussels Dr. J. Gunzburg, professor of physical treatment in the University, gave a demonstration of cases at the Brugmann Hospital, differing diagnoses and nomenclature being especially studied. Another series of demonstrations and discussions afterwards took place at the clinic for physical treatment in Amsterdam, directed by Dr. van Breemen. Both at the Brugmann Hospital and in Amsterdam it is understood that plans are being prepared for a larger clinic for rheumatic diseases, with beds and facilities for study and teaching.

ANNOTATIONS

SURGICAL TREATMENT OF OTOSCLEROSIS.

THE essential lesion of otosclerosis lies, so far as is known, in the capsule of the labyrinth, and it is characterised by the formation of new bone, which in many cases occludes the fenestra ovalis and fixes the stapes rigidly in its niche. In the earlier days of otology attempts were made to treat this fixation by surgical methods, but otosclerosis was not thoroughly distinguished from other lesions. The fixation was often cicatricial and the consequence of chronic "dry" catarrh or old suppuration, and the results were disappointing, since any increased mobility was evanescent even if there was sometimes temporary improvement. Attempts have also been made to obtain the desired effect by means of a permanent opening elsewhere in the capsule of the labyrinth, either in the neighbourhood of the fenestræ or into the external semicircular canal, and immediate improvement has resulted in a number of cases. The condition has, however, been inclined to relapse, and it appears essential to graft a thin membranous covering on to the new opening. One of the difficulties of surgical treatment is that bony bosses may project into various parts of the labyrinth; the round window may be occluded or the scala tympani even completely filled up, and there is a liability to secondary degeneration of the organ of Corti. Such lesions set obvious limits to surgical treatment, but degeneration of the end-organ, at any rate, can be excluded by a previous functional examination. G. Holmgren improved the technique of these operations by the use of an operating microscope, and in 1923 reported [1] four cases in which he made an opening in the promontory, with improvement of hearing in three, but the cases had only been under observation for a few months when he described them. More recently Prof. Maurice Sourdille,[2] working on similar lines, has elaborated a very complete technique. His method of operation, performed in two stages, aims at making an opening through the bony capsule of the labyrinth at the site of the prominence of the external semicircular canal and covering it with a delicate membrane grafted from the thin cicatricial tissue which lines the antrum after the preliminary operation. At this first operation the mastoid is opened, the soft parts of the membranous meatus separated from the bony canal, and the upper half of the tympanic membrane freed and displaced downward in continuity with the skin of the meatus; the bony "bridge" comprising the outer attic wall and part of the tympanic ring is resected, and usually also the incus and head of the malleus; and a flap is cut from the postero-superior wall of the membranous meatus and applied to the inner wall of the attic, thus hermetically closing off the tympanic cavity from the mastoid region. The second operation is performed a few months later; the retro-auricular wound is reopened, a flap cut from the cicatricial tissue covering the region of the external semicircular canal is turned forward, the prominence of the canal is filed through with special "rubbers," exposing but not opening the membranous canal, and the flap is replaced to cover the new opening and kept in position by paraffined gauze until the entire mastoid cavity has cicatrised. The operations are performed under local anæsthesia, and the hearing is found to improve remarkably at the moment of perforation of the bony capsule. Prof. Sourdille reports six cases completed and thirteen still under treatment; the hearing has improved in all six, in five sufficiently to be noticed by the patients' friends and relations. But no case has as yet been under observation for more than 12 months, and a final judgment cannot be made until two or three years have elapsed. The operation is delicate and difficult, but it appears to hold out a hope of improving the hearing in some cases of otosclerosis. At present, at any rate, its indications must be limited to those comparatively few cases whose deafness is so severe as to be a complete disability, and in whom degeneration of the nerve mechanism has not yet occurred.

[1] Acta Oto-laryngologica, 1923, v., 460.
[2] Jour. Laryngol., September, 1930, p. 601.

WATER SNAILS AND BATHING RASHES.

THE University of Michigan has a biological station on Lake Michigan, and it was noticed many years ago that men wading to procure specimens in certain parts of the lake were liable to a dermatitis. Its cause entirely eluded discovery till W. W. Cort,[1] professor of helminthology in the Johns Hopkins University, was sorting out snails which had been collected from the lake, and which had been placed in a bucket. A severe prickling sensation, recalling the bites of small insects, attacked the hand after it had been intermittently dipping into the water for ten minutes in the removal of the snails. The conjunction of events suggested to the helminthologist that a larval stage of some fluke was emerging from a snail and had penetrated his skin. Examination showed that from a limnæa species large numbers of a schistosome cercaria were issuing, and when a few were placed on Cort's skin they produced the typical lesions to be presently mentioned. In five of seven other persons the same sequence occurred; the other two suffered no inconvenience.

C. Matheson [2] has reported that at Cardiff, in the bathing seasons of 1927, 1928, and 1929, there were epidemics of an irritating rash—slight in the first year, considerable in the second, and less in the third. The pool concerned was an artificial lake in a municipal park, and the only persons affected were those who bathed in it. Many hundreds using a path bordering the lake entirely escaped, and the parts of the body not covered and protected by the bathing dress were mainly or even solely affected. No bites were felt. Investigation of the fauna and flora, including the bacteria of the lake, gave no help as to the cause, but a study of the literature disclosed Cort's paper. An examination of the molluscs showed that a limnæa, *L. stagnalis*, which appears to be a recent addition to the local fauna, was emitting cercariæ. On these E. L. Taylor and H. A. Baylis [3] have issued a valuable report, elucidated by beautiful drawings by Miss Rees. The cercariæ were of two kinds, only one being of medical interest. It is the same in structure as that reported by Cort, and is identified as *C. ocellata*, described by La Valette St. George in 1855. It is strongly attracted to light and to the surface of water, and closely resembles the cercaria of *Bilharziella polonica*, the adult form of which lives in the mesenteric veins of ducks. Its definitive host will

[1] Jour. Amer. Med. Assoc., 1928, xc., 1027.
[2] Trans. Roy. Soc. Trop. Med. and Hyg., 1930, xxiii., 421.
[3] Ibid., 1930, xxiv., 219.

almost certainly prove to be some aquatic bird, and it may be said with confidence that it cannot survive in man. Nevertheless, it can produce uncomfortable consequences in its attempts to do so. Within a few hours of bathing there may appear a blotchy urticarial and papular dermatitis with punctate red centres to the papules. Irritation is so intense that the consequent scratching may induce free bleeding. The duration varies greatly. In Cort's skin the papules became pustules which began to dry up after five days with rapid clearance of lesions. In a deliberate infection by Taylor on his own forearm the lesions were still very plain after four weeks, and had not altogether disappeared in seven. Light is probably thrown on this persistence by another self experiment—by H. Vogel [4] in the laboratory of the Instituts für Schiffs- und Tropenkrankheiten at Hamburg. He allowed 34 of these cercariæ to penetrate a defined area of his skin, had the whole area excised after 24 hours, cut it in serial sections, and found 11 of the larvæ in the epidermis. One was surprised on the point of escaping into the dermis, and no doubt the missing 23 had already done so to their destruction. Now when Fülleborn submitted in the same laboratory to the same surgical procedure more than two weeks after infecting his skin with larvæ of the dog hookworm, they were still there and alive, since it was not until they had been in his epidermis for two weeks that they began to produce the creeping eruption to investigate which he had the operation done. It may be, then, that persistence of the eruption after penetration of *C. ocellata* is due to persistent presence of the cercaria in the epidermis; and it is worth noting that freezing the skin with ethyl chloride is sufficient to kill nematode larvæ which persist in it, and that cercariæ are probably even more vulnerable. On the general question it is easy to point out that the annoyance to bathers will cease if the snails are eliminated or the waterfowl which are presumably concerned are driven from the lake. But the practical measures necessary to achieve this are quite another matter and not likely to be readily defined.

STUDIES IN UNTREATED MALARIA.

THE treatment of neurosyphilis by experimentally induced malaria has furnished a method by which the course of untreated malaria can be studied. At the Calcutta School of Tropical Medicine and Hygiene, Lieut.-Colonel R. Knowles, I.M.S., and Assistant Surgeon B. M. Das Gupta have been attacking the complicated problem of malaria therapy from this angle.[5] An experimentally produced case of quartan malaria was procured and systematic parasite counts made by Sinton's method, using fowls' corpuscles as an index. The subject was a Hindu male who showed pronounced symptoms of neurosyphilis and was inoculated intramuscularly with quartan malaria blood. After one unsuccessful attempt, rigors with parasites in the blood were produced within 16 days of the inoculation. Seven hours before a rigor the parasite population had reached a figure of 43,600 per c.mm.; in general it tended to fluctuate between 6000 and 10,000 per c.mm. Rigors occurred almost daily; there was no semblance of quartan periodicity and the patient was a very sick man. It was possible to contrast this primary attack with a case of chronic relapsing quartan infection; in the latter the infection was associated with low parasite counts with a tendency towards reduction of the parasites. In the experimentally induced infection no tendency towards spontaneous cure was exhibited, and a consideration of its course enables us to understand reports of extremely severe and sometimes fatal outbreaks of quartan malaria in the Dutch East Indies. It is clear that quartan malaria may become a very severe disease. By means of accurate parasite counts Knowles and Das Gupta estimated the natural powers of resistance of the patient to be such that he could kill off 95 per cent. of the parasite population at each schizogonic cycle. It is probable that parasites are destroyed only during the free merozoite stage. When once they have entered within the red blood corpuscles they are safe until the next schizogonic cycles matures. In cultures of malaria the destruction of parasites is observed to be confined to the free merozoite stage and takes place by phagocytosis by the polymorphonuclear leucocytes; but the same phenomenon has never been observed in blood films from man made in the course of naturally acquired malaria. On the other hand, such evidence as has been obtained by spleen puncture from malaria cases indicates that the parasites are destroyed by lysis rather than by phagocytosis. The primary attack of quartan malaria does not show the characteristic periodicity any more than the primary attack of benign tertian does; it is only as the infections become well established that typical periodicity is attained. Knowles and Das Gupta have also taken the opportunity to count the periods of duration of the schizogonic cycle of *Plasmodium malariæ* (the quartan parasite). In this parasite the free merozoite stage lasts one hour, the ring stage 17 hours, the young trophozoite 47 hours, the stage of schizogony 6 hours, and the mature rosette stage 1 hour. The authors believe that in ordinary endemic malaria, in untreated patients, the case mortality is not much higher than 2 per cent.; in other words, some 49 out of every 50 untreated patients recover spontaneously from their attacks of malaria, and, in their view, it is doubtful whether more than 1 in every 500 patients who contract malaria annually receives a thorough and prolonged course of quinine. We commend this study to all those interested in malariology.

[4] Derm. Woch., 1930, xc., 577.
[5] Indian Medical Gazette, 1930, lxv., 195.

BROWN-SÉQUARD.

Charles Edouard Brown-Séquard was born at Port Louis, in Mauritius, on April 8th, 1817; his father was an American sea-captain of Philadelphia, his mother a French Mauritian, and he always emphasised the fact that he was a British citizen. He died in France on April 2nd, 1894. The attempts of his compatriots to raise some memorial to the variegated and distinguished activities of those 77 years have not had much luck. A bust placed in the Public Gardens at Port Louis in 1898 was destroyed in a hurricane in 1924; it was replaced by a better and more durable version in 1928. The due celebration of his centenary was, of course, prevented by the war, and it is only now that his devoted admirer, Dr. F. A. Rouget, President of the Medical Society of Mauritius, has been able to issue a memorial biography which, as is proper on such occasions, deals as much with his personality as with his scientific work. His father disappeared at sea when he was a child and he grew up in meagre circumstances, spending some years as an assistant in a general store. Friends then found funds for him to go to Paris where he arrived at the age of 21, purposing a career in literature. He

soon had to turn to something more solid and graduated in medicine in 1846, sinking himself then and for some years afterwards in a passionate experimental inquiry into the functions of the spinal cord. The restoration of the monarchy in 1851 gave him a reason—or at any rate an excuse—to embark for America, without knowing a word of English but reckoning that he could pick up enough of the language on the voyage. He made a precarious livelihood, partly as a physiologist and partly as a midwife, and in a couple of years was back in Paris working at physiology. His fame grew, he founded the *Journal de Physiologie* in 1858, and in the same year was invited to come to London to lecture at the Royal College of Surgeons on the central nervous system. Here he stayed five years, became a member of the staff of the National Hospital, a Fellow of the Royal Society, and in 1861 their Croonian lecturer. But in 1863 he was off to America again and became professor of physiology at Harvard; from 1868–73 he taught in the École de Médecine in Paris, and then followed some miserable years of wandering, partly spent in practice in New York. Finally, in 1878, he went back to Paris to succeed Claude Bernard as professor of experimental medicine, in the Collège de France, and he died in that capacity. He was married three times and his grandson, Dr. Charles Edward McCausland, is in practice at Eyam, in Derbyshire. Throughout this troubled life he was continually obsessed with a fiery passion for work—experimental, clinical, and imaginative. He went to bed at 10 and got up at 4, and left behind him more than 500 papers. All that he did was certainly not first-rate, but in at least two lines he was a distinguished pioneer. His early work on the conducting tracts in the spinal cord threw a new light on the working of the nervous system, and his knowledge of neurology in general was exceptional and always progressive. In later life he became well known to the general public for his advocacy of the use of testicular extracts for rejuvenation. And whatever the truth or propriety of his contention, his work is conspicuous as one of the earliest attempts to apply internal secretions to practical medicine. We heartily sympathise with Dr. Rouget in thinking that the memory of a great man should be recalled for our edification, and the book which he has put together is most appropriate for the occasion.

TESTICULAR GRAFTS.

DIFFICULTY in obtaining an active extract of the testis has given a stimulus to the use of grafts, and for the last ten years, and more particularly as the result of Voronoff's work, testicular grafting has been extensively employed in various clinical conditions supposed to be due to a deficiency of the male hormone. The exponents of grafting have claimed from it good results, and undoubtedly in many cases the patient appears to have benefited from his operation. However, in the absence of reliable objective signs of improvement and with the ever-present possibility that the patient's improvement may be the result of suggestion, no certain proof has ever been furnished that testicular grafting is effective. Even where reliance has been placed on such criteria as basal metabolism rates, sugar toleration tests, blood examinations, and alterations in body-weight and blood pressure, the clinician can never be certain that the changes noted are the direct result of the implantation of the graft. It is, therefore, not surprising that the laboratory worker has looked with scepticism on the proofs the clinician offers of the efficacy of his grafts. In the *Journal of the American Medical Association* (June 4th, 1930) Dr. Carl R. Moore (Chicago) makes a critical examination of the claims made, and expresses the opinion that there is no evidence that either homo- or hetero-grafts have had any effect whatever. Dr. Moore is well known in this country for his work on the male hormone, and particularly for the laboratory methods he has elaborated for detecting its presence in animals. He has shown that in the rat castration produces within four days involutionary changes in the secretory cells of the prostate and seminal vesicles, and that these changes may be prevented by the use of an effective hormone preparation. In guinea-pigs he has judged by changes in ejaculation reflex produced by electrical stimulation of the genitals, and alterations in the viability of the spermatozoa found within the epididymis. By means of these and of similar tests he claims that it is possible to prove whether male hormone is or is not being produced by a transplanted testis within a week of its being placed in position. In order to test the efficacy of testicular grafting he has carried out auto-transplantations in both the rat and the guinea-pig, and has found that his tests invariably give negative results. In other words, the animal with a transplant differs in no way from a castrated one. It is only fair to add, however, that the transplantation has been carried out in a way that makes it almost certain that the transplants are not viable, and Dr. Moore claims only that his experiments show the futility of any idea that a graft during the process of absorption liberates an effective amount of hormone. He does not assert that his experiments disprove the action of a graft that has taken, but contents himself with pointing out that in all probability only a few transplants become viable.

The explanation of the inefficacy of non-viable transplant lies in the fact that little or no storage of hormone occurs in testicular tissue. In this respect the testis is unlike the thyroid, in which a considerable storage occurs. This fact is correlated with the observations that the male hormone is excreted in the urine in considerable quantities. Indeed, urine provides the most favourable material from which male hormone can be prepared. Dr. Moore's contribution to the subject of testicular transplants is particularly valuable in view of the extravagant claims that have been made by enthusiasts whose industry in grafting exceeds their critical faculty in assessing results. He furnishes an example of the valuable assistance that the laboratory worker can give to the surgeon by submitting clinical opinions to the more exacting tests.

INTRAVENOUS PYELOGRAPHY.

SINCE an annotation on excretion urography appeared in THE LANCET six months ago,[1] uroselectan has passed into general use, and it is now possible to speak with greater certainty of the value and of the limitations of the method. Sufficient evidence has accumulated to justify the introduction of intravenous urography, which furnishes a valuable addition to our means of diagnosis in urinary conditions. It has in no way become a general substitute for the older technique of retrograde pyelography, but provides an easy means of outlining the urinary tract in those cases where the employment of the

[1] THE LANCET, 1930, i., 702.

older method would be difficult or inconvenient. Moreover, the fact that the rapidity of excretion of the drug depends on the efficiency of the kidney gives to intravenous pyelography an additional advantage, for it affords some idea of the comparative functional value of each kidney. The quicker and the more densely the shadow appears, and the more rapidly it fades, the greater is the functional value of the kidney concerned. If no shadow or only a very faint one appears on one side it is practically certain that that kidney is the site of a severe pathological lesion. In the experience of Mr. R. Ogier Ward and of Mr. Kenneth Heritage[2] the ability to secrete uroselectan, in sufficient quantities to be detected radiologically, seems to be retained although the organ may be working under great difficulties, and in those cases in which the pelvic shadow is absent from all radiograms the organ has been subsequently discovered to be so disorganised as to be functionless. The fact that even a badly embarrassed kidney retains the power of excreting uroselectan allows the drug to be used in all except cases of very definitely impaired renal function. Provided the correct technique has been carefully followed, the risks of intravenous pyelography appear to be very small. As a rule, no reaction follows its use, and even when symptoms are noted they are no greater and probably less than those that may result from the older methods. Certain accidents have been reported, but these have all been due either to faulty technique or to the use of the method in unsuitable cases. Heritage and Ogier Ward had the opportunity of submitting a kidney to microscopic inspection a short time after the employment of uroselectan, and Dr. H. F. Brewer could find no indication of renal damage. In our last issue Mr. R.V. Cooke maintained that "kidney function must be very bad before the test becomes dangerous."

When we compare the radiographic results of uroselectan with those obtained by retrograde pyelography it is obvious that the shadows lack the definition and clearness of those obtained by the older methods. Indeed, for the detection of minor deformities of the calices and of the slight alterations in the pelvic shadow produced, say, by a renal papilloma, it is generally necessary to have recourse to retrograde pyelography. Especially is this necessary when owing to functional impairment the excretion of the drug is diminished, although here the concentration of the drug in the kidney and ureter may be temporarily increased by partial occlusion of the ureter. In order to achieve this partial occlusion it is only necessary to interfere with ureteric peristalsis by applying compression at the level of the sacro-iliac joints. The chief value of uroselectan, however, is where cystoscopy and ureteric catheterisation is difficult or impossible, for example, in cases of prostatic obstruction or stricture, cases of severe cystitis and particularly of tuberculous cystitis (where cystoscopy is excruciatingly painful and distension of the bladder impossible), cases of severe hæmaturia, and where the patient is a child. Nervous patients who submit badly to the searching examination of the urinary tract that may be necessary for the establishment of an exact diagnosis will also appreciate its advantages, while most authorities consider it the method of choice when bilateral pyelography is indicated. Prof. Arthur Binz, Prof. A. von Lichtenberg, and Dr. M. Swick have undoubtedly provided clinical medicine with a means of placing urological diagnosis on an even more accurate basis than was previously possible.

[2] THE LANCET, July 19th, p. 132.

CALCIUM REQUIREMENTS IN THE HUMAN SUBJECT.

WHILE mineral metabolism is receiving much attention from physiologists nowadays, their observations have mostly been carried out on laboratory animals. These animals are convenient in that they can be kept under control as regards diet and the collection of excreta, but must be supplemented by controlled observations on human beings before conclusions affecting man can be drawn. Dr. Francis C. Kelly and Dr. John M. Henderson have conducted a series of experiments[1] on the calcium metabolism of adult male inmates of the prison at Nairobi. The subjects were all receiving the basal diet usually supplied to the prisoners, and during these observations they performed their regular routine duties. The standard diet was composed of cereals, beef, potatoes, ghee, salt, and lemons. Analysis showed it to have a sufficiency of proteins, carbohydrates, and fat; and the daily ration yielded 3450 calories. The calcium intake, however, was found to be only 0·30 g. per diem, and the phosphorus 2·36 g. It was decided to observe the effect of adding to the daily basal diet a supplement, composed of a mineral mixture which approximated both qualitatively and quantitatively to the ash content of one pint of milk. Some of the subjects received cod-liver oil in addition to this mixture, and others were given only the cod-liver oil supplement. The period of observation extended over six months, and all the subjects, including those in the control group, showed an increase in body-weight during this period. This increase, however, was most marked in those subjects receiving the mineral mixture with cod-liver oil, next in those receiving cod-liver oil, and least in the group receiving only the mineral supplement. All these groups showed a greater increase than did the controls. There was further noted a difference in the retention of the gain in body-weight after the withdrawal of the supplements. Those subjects who had received cod-liver oil with or without the mineral addition retained longest their increase in weight. Concurrently it was noted that a rise occurred in the calcium content of the blood in all subjects put on a supplemental diet; and although the blood calcium fell after the withdrawal of the supplement, on the average it remained higher than the previous normal. There appeared to be a certain degree of correlation between the increase of body-weight and the blood calcium level. These improvements could not be due to the cod-liver oil per se, because they were obtained also in the subjects who received only the mineral mixture addition. Evidence was also obtained which suggested that the presence of intestinal parasites may have an effect in lowering the calcium content of the blood.

Discussing these results the authors conclude that the calcium is one of the most important constituents in the mineral mixture. In all the 42 subjects the initial level of the blood calcium, although within physiological limits, was low. This could be accounted for by the poor calcium content of the basal diet, only 0·30 g. per diem. Further, in a few tentative experiments, it was shown that five out of eight subjects on the basal diet, either with or without cod-liver oil, were in a negative calcium balance, whereas when the mineral mixture was added seven out of eight showed a positive calcium balance. When the elimination of calcium salts in the urine

[1] Collected Papers of the Rowett Research Institute. Vol. II. Edited by John Boyd Orr, M.D., D.Sc. Aberdeen: Edmund and Spark. 1930. Pp. 588. 21s.

and fæces exceeds the amount taken in the food, the calcium balance is negative. When the output is less than the intake, calcium is retained in the body and the calcium balance is referred to as positive.

These observations on calcium balance were further pursued on growing boys and yielded interesting results. The boys were receiving a diet similar to that supplied to the adults. Five subjects were examined, and four of them were found to have a negative calcium balance. Adding cod-liver oil by itself had no effect. The daily calcium requirement of these boys was found to be 0·43 g., and, if additional mineral mixture was supplied, 50 per cent. of the excess calcium was retained. When, however, the calcium was supplied in the form of milk, more than 70 per cent. of the excess calcium over basal requirements was retained. The authors conclude that when an individual is living on a low calcium diet the amount of calcium in the blood may not necessarily reflect this deficiency; further, that under these conditions the addition of more calcium to the diet is followed by a rise in the calcium content of the blood, and that this rise is not transitory. We note with regret that Dr. Henderson died at Nairobi shortly after this work was completed.

SMOKE ABATEMENT.

THE second annual conference of the National Smoke Abatement Society was held at Leicester last week-end. Dr. H. A. des Vœux, who presided, called attention to certain defects in drafting the Public Health (Smoke Abatement) Act, 1926, which greatly diminished its useful application. Definite progress has been made during the past year in ways which must in the aggregate lead to appreciably cleaner air, in spite of the present depression which has led the shallow-minded to associate clean air with empty factories rather than with efficient factories, and has made plausible the mischievous slogan, "What we want is more smoke." At a largely attended public meeting on Friday evening Dr. R. Veitch Clark, medical officer of health for Manchester, set out once again the social and economic objections to a smoke-polluted atmosphere. Hygiene has found a new ally in aeronautics, for two experts from the Air Ministry voiced the difficulties of piloting aircraft across smoke-laden industrial areas. An airman approaching a large industrial city frequently sees nothing but a grey smudge of smoke. The expansion of air travel thus makes it necessary to strike at the smoke nuisance from still another angle. Miss Margaret Fishenden, D.Sc., who read a paper on Sunday morning, is one of the leading fuel experts in the country, and she has done much research upon methods of domestic heating. For domestic purposes the main alternatives to raw coal are gas, coke, or other carbonised fuel, and electricity. The gas industry has striven systematically towards improved methods of manufacture, distribution, and use, and in consequence the yield of gas per ton of coal carbonised has steadily increased, the price per therm has fallen, and the efficiency of gas appliances has improved. At the same time, every effort is being made to establish a more general and cheaper supply of electricity in Great Britain. The Central Electricity Board, under powers conferred by the 1926 (Electricity) Supply Act, and working in cöoperation with the established electricity supply industry, is gradually constructing a network of lines connecting the main generating stations and bringing a wider area under supply from efficient plant. Many small out-of-date plants are being shut down, and it is hoped to decrease substantially the average price of electricity production. Notwithstanding these advances, the total domestic consumption of coal remains steady, although the consumption per head is slowly decreasing. It is generally admitted that for inclusive household purposes either gas or electricity, or any combination of the two, would compare unfavourably with coal on the basis of running costs, and that to assist a rapid improvement in the smoke nuisance some cheap solid smokeless fuel is called for. Hence the attention paid during recent years to the possibilities of low-temperature carbonisation. The products vary widely according to the manner of carbonisation, but in most cases the primary aim is either to produce an improved smokeless fuel or to deprive the coal of the greatest possible quantity of tar and spirit before using it for ordinary furnace purposes. In Great Britain the production of a smokeless free-burning solid fuel for use in domestic grates and in the smaller industrial plant is the more important, but unfortunately the externally heated retorts, which are most suitable for this purpose, are relatively expensive to erect and work, and, according to estimates made by Dr. C. H. Lander, are scarcely likely to pay unless the coke can be sold at a sufficiently high price to cover the cost of the coal treated. Since only about 14 cwt. or 15 cwt. of coke is produced per ton of coal, this means that the price of the coke would have to be 30 or 40 per cent. above that of the coal. The demand for low-temperature coke at a price about equal to that of the best household coal still exceeds the supply, but comparatively little is yet available, and there is still doubt whether it could be produced economically on a scale at all commensurate with the present national requirements even at this price. Further, if any considerable proportion of the 40 million tons of raw coal now used for household purposes were to be replaced by the product of low-temperature carbonisation, it might be expected that the price of coal suitable for treatment would rise, while the price of domestic coal would fall. From the many estimates that have been made it seems probable that the damage directly due to smoke from domestic fires averages at least 10*s*. per ton of coal burned, while if the coke from low-temperature carbonisation could command 10*s*. a ton more than household coal, some of the processes already developed could probably be worked at a satisfactory profit. We can only hope for the best, Dr. Fishenden concluded, in regard to low-temperature coke production, but in the meantime where raw coal is used it should be burned with as little smoke as possible.

BY special invitation of the Council of the Royal Society of Medicine, Dr. Chevalier Jackson, of Philadelphia, will deliver a lecture on Suppurative Diseases of Lung, at 1, Wimpole-street, W., on Tuesday, Oct. 14th, at 8.30 P.M. Dr. Jackson will illustrate his lecture by cinematograph films, slides, and chalk drawings executed while he speaks.

Summer Time, which commenced in Great Britain, Ireland, the Channel Islands, and the Isle of Man on April 13th, will cease on Sunday next, Oct. 5th, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2–3 A.M. Summer time will thus be followed by the hour 2–3 A.M. Greenwich time. As France and Belgium make the change at the same week-end the cross-channel traveller will not need to readjust his watch.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXIV.

RADIOGRAMS OF THE CHEST.

(WITH ILLUSTRATIVE PLATES.)

PART I.*

NORMAL AND INFECTIVE CONDITIONS.

So variable is the anatomical structure of the lung that it becomes exceedingly difficult to define with any accuracy the normal lung. No two lungs are identical in regard to the size and arrangement of the pulmonary vessels, for instance, or in the amount of interstitial tissue, while age, occupation, and even the technique adopted in obtaining the radiogram have all to be taken into consideration; in other words, a sixth sense has to be acquired, and this can come only by close attention and experience. It ought to be appreciated that many adventitious shadows seen in the lung fields are not of necessity evidence of a pathological state but must be regarded as falling well within the limits of the normal.

The Normal Adult Chest.

The lungs, as seen in a radiogram, occupy the whole of the space within the bony thorax, limited below by the diaphragm, and separated by the mediastinum and heart. The trellis-like arrangement of the ribs—seen better with the tube below or behind, and the film on the anterior thoracic wall—is easily recognised. The lung, composed of air cells and some interstitial tissue (the latter varying in amount and more obvious in the presence of emphysema), is traversed by the bronchi, lymphatic vessels, and blood-vessels. Since in the ordinary radiogram the observer is, so to speak, looking at a series of superimposed sections of lung tissue, it is obvious that the linear markings caused by these sections must be more pronounced at the region of the hilum, or in situations where the bronchial tubes and blood-vessels are the largest, for example, from the root towards the apex and base; consequently near the periphery the lung assumes a more or less marbled appearance, as Wessler and Jaches aptly describe it (fig. I A.). It is also quite obvious that congestion, or the conioses, or even dusty occupations will tend to exaggerate these linear markings.

The hilum of the lung, composed as it is of bronchi, blood-vessels, lymphatic glands, and a varying amount of connective tissue, varies widely in size and shape; probably, in the adult at any rate, it never represents an anatomically normal condition, and yet clinically it may be quite normal. The dust and fog of our large cities, the effect produced by certain exanthemata, such as measles and whooping-cough, and of bronchitis, the response of the lymphatic glands to an early tuberculous involvement, all will leave their mark upon the lung root. In the rarely seen normal hilum (figs. I A. and I B.) the shadow is comparatively small, showing some linear markings only, which are probably pleuro-pericardial folds, and bronchial tubes which appear as small cavity-like rings as they are passing backwards, or as fine double-outlined cylinders. The lymphatic glands are not, as a rule, seen as independent shadows unless they are the subject of disease. There may be definite hyperplasia and fibrous tissue deposit, or at a later stage the deposit of calcium salts. The greater the deposit of calcium the denser will become the shadow of a bronchial gland and the more discrete (see fig. I C.). In the vast majority of cases, however, these shadows have no pathological significance, and do not justify the importance that has been attached to them by some observers.

Pathological Conditions of the Lung.

Possibly in no other branch of radiology is there greater difficulty than in the interpretation of radiograms illustrating disease of the lung. The attempt to dissect a radiogram and to regard all adventitious shadows as pathological has led to much distrust of radiology and to many heresies, of which the chief are "peribronchial phthisis" and "hilum tuberculosis." Many men escaped military service during the great war on the doubtful diagnosis of "peribronchial phthisis"; it is true that these men were mostly living unhealthy lives in the slums of our great cities, but none of them had symptoms nor were their activities interfered with.

Radiography at a distance of 2 metres, or perhaps 1·5 metres, is to-day no longer a luxury but a vital necessity for accurate diagnosis, and apparatus for this purpose is on the market. Since in many chest diseases it is necessary to examine the patient more than once it is well to be able to repeat every radiogram under precisely similar conditions. These can be secured by the simple expedient of making use of a standard position for the patient, the film, and the axial beam of the rays. The tube can be placed beneath the couch with a plumb-bob attachment which gives a fixed point, which may be, for instance, in the mid-sternal line at the level of the third costal cartilage.

PULMONARY TUBERCULOSIS.

It may be assumed that pulmonary tuberculosis starts as an infiltration of the lung parenchyma. To this there are exceptions but the broad principle may stand. The most common situation for the earliest infiltration (in the adult at any rate) is in the upper zone of the lung immediately below and just external to the mid-line of the clavicle. In a doubtful case the evidence upon which the radiologist is justified in the diagnosis of pulmonary tuberculosis is the presence of fine stippling or mottling of the lung parenchyma itself (fig. II.). If such mottling be found and there is any clinical evidence to back it, even though physical signs are not actually present, the diagnosis can be made definitely. If, on the other hand, there is clinical evidence, or even a suspicion of symptoms that the patient has pulmonary tuberculosis, and no mottling of the lung parenchyma is found, then the patient should be under suspicion and a subsequent examination should be made. X ray examinations, made at a later stage, which are consistently negative over a period of about five months may be taken as conclusive proof that pulmonary tuberculosis is not present. No mere heaviness of the hilum shadow, no exaggeration of the linear striation of the lung is sufficient to justify the diagnosis from the radiological standpoint.

Shadows at the Roots of the Lungs.—The lung root is formed of bronchial tubes, blood-vessels, lymph ducts, areolar and interstitial tissue, and the bronchial glands, some 12 in number, which are distributed around the bifurcation of the trachea. The latter drain the lymphatics of the lungs and pleura. Most

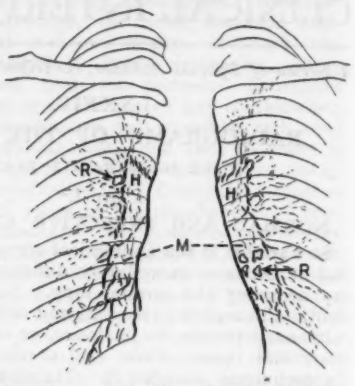
*Part II., New Growths of the Lung, will appear next week.

authorities believe the initial lesion of pulmonary tuberculosis to be in the lung parenchyma, such invasion being rapidly followed by reaction in the lymph nodes. It is a significant fact that the reaction of the lymph glands may be quite disproportionate in size to the initial lesion in the lung, and that the lymphatic glands thus becomes the predominant feature of the picture. In other cases there may be considerable pulmonary disease with very little enlargement of the tracheobronchial glands. It is important to interpret the shadows found in the hilum correctly and not to confuse them with the typical glandular shadows of lymphadenoma, for instance. (See Part III. of this article.) As has already been stated, heavy root shadows are common in city dwellers, and must be distinguished from enlarged bronchial glands. In the early stage the soft swelling of the gland cannot easily be differentiated from the surrounding tissues; in tuberculosis there are frequently calcareous deposits which cause the gland to stand out in marked contrast. As Wessler and Jaches justly remarked when writing of the significance of enlarged root shadows, "To regard these shadows as evidence of involvement of the lung root in a tuberculous infiltration is fatal to a rational interpretation of the plates; a large percentage of mankind would then be pronounced clinically tuberculous and the Rontgen diagnosis would be reduced to an absurdity." The infiltration of pulmonary tuberculosis may and frequently does undergo fibrous changes, leaving only a mass of scar tissue which persists and may be found post mortem.

Fibroid Phthisis.—Where the process of healing and repair are taking place the resulting scar tissue tends to contract, carrying with it the heart and the mediastinal contents (see fig. VI.). If at a later period further infiltration takes place in the other lung it is frequently found to be in the more central part of the lung, often far out towards the periphery. The same phenomenon—namely, central invasion—is sometimes met with in the other lung if infection arises after a therapeutic collapse of the more affected lung.

Cavities.—If the initial dosage has been heavy and the resistance poor the area of consolidation may undergo central necrosis with liquefaction and cavity formation. In the early stages a cavity is small, but it may coalesce with other cavities until finally, through ulceration of the interstitial tissues, a large smooth-walled cavity is seen (fig. III.). In some cases this cavity may closely resemble a pneumothorax; a cavity more frequently has a thickened and somewhat crenated edge, whereas in pneumothorax the lung edge is very sharply defined (see figs. IV. and V.). In the past a difficulty has been made of the differentiation between a cavity and a so-called "annular shadow." Many theories have been evolved concerning these "annular shadows," but the modern view is that most, if not all, of them are, in fact, cavities. At any rate, since they present themselves as part of the picture of pulmonary tuberculosis, it would appear to be the duty of the clinician to regard them as cavities and to collapse the lung in which they occur if collapse is indicated on other grounds. An effusion in a cavity or in a pneumo-

DIAGRAM OF FIG. I A.



H = Hilum. M = Mass at hilum, consisting of bronchial tubes, blood-vessels, and lymphatic glands. R = Bronchi in cross-section.

LEGENDS TO ILLUSTRATIONS APPEARING ON SPECIAL PLATES.

I A. Normal lung. Note linear striation and marbled appearance of lung towards the periphery.

I B. Normal lungs, showing the shadow thrown by the breast which may lead to error in interpretation. The shadow each side is defined by a curved line immediately above the diaphragm on either side and convex to it, leaving an area between itself and the diaphragm of more translucent lung tissue.

I C. Old healed tuberculosis involving bronchial glands, showing appearance of calcified glands at the root of the lung.

II. Pulmonary tuberculosis. Early infiltration in the upper part of right lung, and therefore lessened translucency. Note lessened expansion of right apex and fine stippling in infraclavicular region on the right side.

III. Large cavities at apices of both lungs. Right lung shows stippled shadows towards the base. The cavity at the left apex is partly masked by the strands of interstitial tissue. The lung below this cavity is hypertranslucent because of compensatory emphysema. The lower two-thirds of the right lung show the infiltration characteristic of tuberculosis.

IV. Large cavity in right lung. Distinguish this from fig. V. by irregular outline of the cavity and the massive infiltration of the other lung.

V. Spontaneous pneumothorax in right lung, which is very similar to cavity shown in fig. IV. but has sharply defined outline.

VI. Fibroid phthisis, showing marked contraction of the left lung; displacement of heart and mediastinum. Note infiltration in the central area of the right lung.

VII. Miliary tuberculosis, showing the fine punctate stippling of all zones.

VIII. Bronchiectasis; a case in which the only definite clinical evidence was hæmoptysis. The extreme base of the left lung is less translucent than in the normal chest.

IX. The same case as shown in fig. VIII. after injection (intratracheal) with lipiodol, in which the glove-like processes seen especially behind the diaphragm at the base are characteristic.

X. Silicosis. Note the fine stippling, which closely resembles that of miliary tuberculosis shown in fig. VII.

XI. Silicosis in which a broncho-pneumonic tuberculous process has been superadded.

XII. Pleurisy with effusion. Note curve (the Ellis curve) at the upper limit of the effusion, passing in a direction upwards and outwards towards the mid-line of the clavicle.

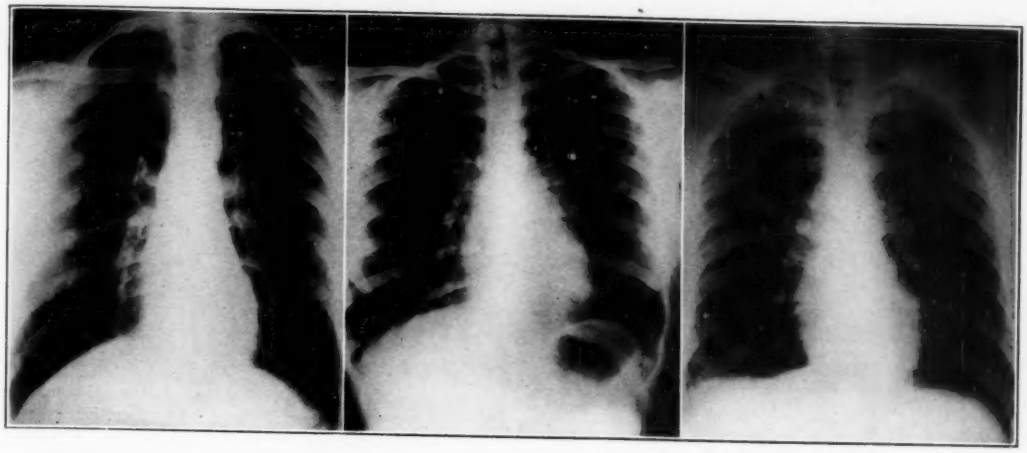
XIII. Pleurisy-encysted effusion in interlobar fissure. The heart, mediastinum, and trachea are displaced to the right side; on this side the lateral portion of the diaphragm is invisible. Passing from the diaphragm upwards in the axillary line there is an indefinite area which suggests encysted fluid. This area viewed in the oblique diameter (fig. XIV.) is seen to be connected with the interlobar fissure between the middle and lower lobes of the right lung. The dense opacity on the left side external to the chest wall is the shadow of the breast.

XIV. The same case taken in the lateral plane to clinch the diagnosis. Note the oblique line in the lower part of the lung space indicating the position of the encysted fluid.

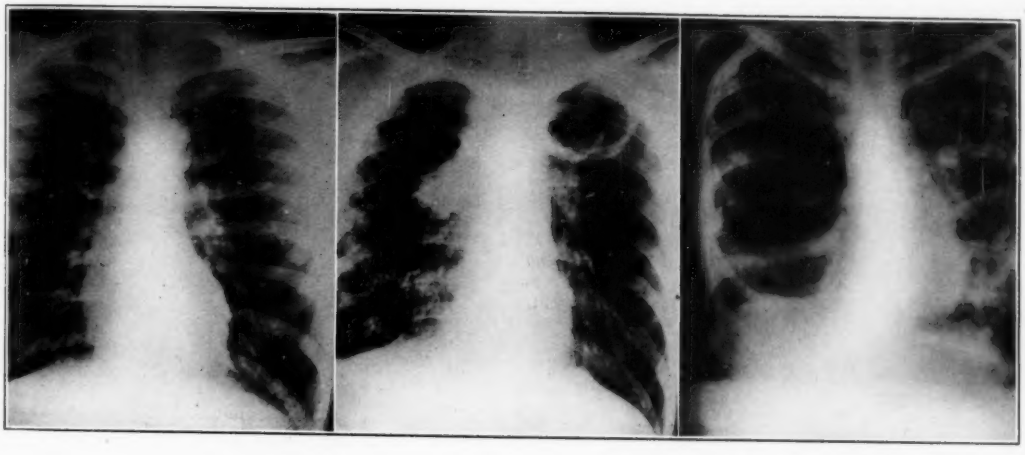
XV. Diaphragmatic pleurisy with effusion. On the left side there is reflex inhibition of the diaphragm, which is immobile. Above this there is a dense layer, conforming in contour to the diaphragm, which represents an encysted effusion. The triangular area of translucency below the diaphragm may represent the stomach or the splenic flexure.

XVI. The same case in the lateral plane. The diaphragm can be seen just overlying the translucent fundus of the stomach while posterior to it—i.e., towards the vertebral column—will be seen the fluid as it occupies the lower part of the pleural cavity.

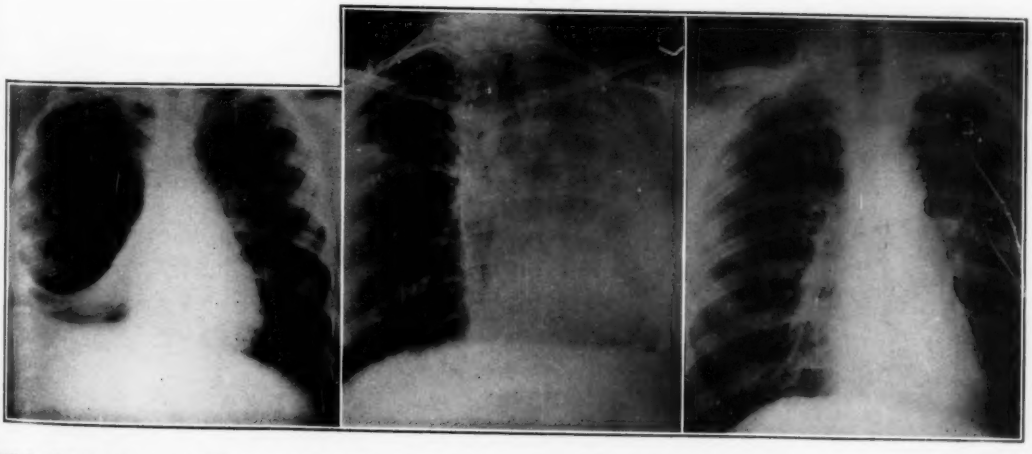
I A. I B. I C.



II. III. IV.

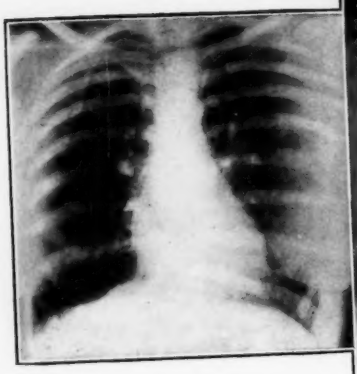


V. VI. VII.



DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

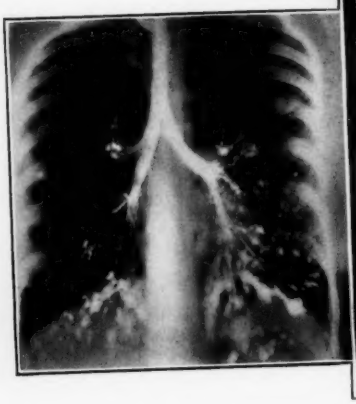
VIII.



X.

XI.

IX.

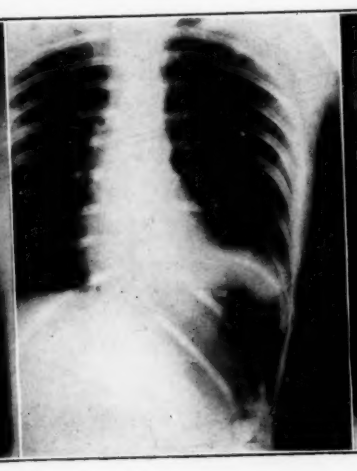


XIII.

XIV.

XII.

XV.



XVI.

thorax will be seen as a dense opacity, showing a fluid level which will obey the laws of gravity according to the position of the patient. In tuberculous broncho-pneumonia opacities can be seen scattered over the affected part of the lung, corresponding to the lobules involved. After hæmoptysis there are frequently signs only of bronchitis, but the presence of broncho-pneumonia can be detected on X ray examination.

Miliary tuberculosis presents a characteristic appearance, the lungs being studded over with opacities the size of small beads. This condition is extremely difficult to show in a reproduction of a radiogram, but an attempt has been made in fig. VII.

In chronic tuberculosis recent infiltration appears as a localised mottling, whereas older infiltrations have a linear appearance. The change from the soft stippled shadows to the harder and more linear opacities therefore indicates fibrosis, and may be taken as a sign of healing.

BRONCHIECTASIS.

The X ray appearances in a typical basal case are characteristic. There may be fixation or lessened excursion of the diaphragm on the affected side. If there is much fibrosis the heart and mediastinum are displaced towards the affected side, and on respiration there may be pendulum-like movement of the mediastinum towards the diseased side during inspiration and away from it during expiration. The film shows mainly fibrosis, and it may not be possible to see the actual dilatation of the bronchi without the injection of lipiodol. Sometimes the bronchi are seen filled with secretion, and later, after there has been much expectoration, they show as definitely dilated shadows with bud-like processes (sacculæ). The more common are "glove-finger" dilatations, and the intrapulmonary injection of lipiodol shows up in relief the characteristic picture. Of late, in some doubtful cases in which the only clinical evidence has been recurrent hæmoptysis and some physical signs of doubtful significance, the injection of lipiodol has cleared up the diagnosis (figs. VIII. and IX.).

PNEUMONOCONIOSIS.

Silica dust in some form is the essential irritant in the production of this disease. Thus gold-miners, metal workers who use sandstone wheels in their work, stone-masons, and workers in asbestos factories are the chief victims. An early, but according to observers in South Africa, not the earliest stage in the disease, the result of inhalation of silica dust, is a peculiar mottling of the lung, the earliest mottling being as fine as that of miliary tuberculosis (fig. X.). During this stage the normal linear striation of the lung appears to be obliterated and the whole lung, except the apices and at times the periphery, is finely mottled. This is followed by enlargement of the bronchial glands, and the lung then shows the linear streaking of fibrosis. If tuberculosis supervenes the areas of mottling tend to become conglomerate and hazy, the picture thereafter being that of pulmonary tuberculosis in one or other form, and frequently in the form of broncho-pneumonia (fig. XI.). The fine mottling of the lung parenchyma has to be differentiated from a similar infiltration in miliary tuberculosis and in carcinomatosis, in both of which the infection is carried from some focus elsewhere by the blood or lymph stream.

PLEURISY.

The X ray evidence of dry pleurisy is of no great value; there is invariably some reflex inhibition of the diaphragm on the affected side. When this is followed by effusion from whatever cause, the effusion is at first horizontal in position, the costophrenic angle being obliterated, and the dome of the diaphragm soon obscured. Later, often quite rapidly, the characteristic Ellis curve is seen (fig. XII.) with displacement of the heart and mediastinum to the opposite side. Radiographic evidence is most often requisitioned to determine either the amount of residual fluid after paracentesis, the condition of the underlying lung, or the cause of the effusion. It is, however, in encysted effusions that radiography can give the greatest help, especially in interlobar effusion. Encysted effusions are either superficial (apical, axillary, central, or basal) or interlobar (figs. XIII. and XIV.), or concealed either between the lung and the diaphragm (figs. XV. and XVI.).

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Hon. Radiologist, St. George's Hospital, and Hospital for Diseases of the Chest, Brompton.

MEDICINE AND THE LAW.

A Schoolmistress's Neglect to Call in Doctor.

Mrs. Fearn, principal of Merevale High School, Bickley, Kent, was sentenced at the Central Criminal Court on Sept. 26th to 12 months' imprisonment in the second division for having neglected children between the ages of 5 and 9 years in a manner likely to cause them unnecessary suffering or injury to their health. In spite of statements by witnesses that the larder contained insufficient food, and that the premises were dirty, there was no specific allegation of neglect by way of starvation or want of cleanliness. The prosecution rested its case on Mrs. Fearn's omission to obtain medical assistance in due time or at all for various pupils at the school suffering from measles and ringworm. Prosecuting counsel submitted that the accused failed to notify the school doctor or the parents, minimised the seriousness of the children's condition, and neglected them to a degree that was criminal. An inspector of the N.S.P.C.C., who visited the school upon complaint of neglect in respect of a child who had died, said in evidence that Mrs. Fearn told him she owed the regular school medical attendant a bill for fees, and that was why she had not called him in. A practitioner who had attended a schoolgirl suffering from impetigo of the scalp said the child was in a neglected state and should have had medical attention earlier. Another practitioner, whose daughter was a boarder at the school, said that, when he visited her, he was asked to see three other children and a mistress who were all suffering from measles. One child had a temperature of over 101° F.; he thought she should have been seen by a doctor at least two days earlier; he told Mrs. Fearn the cases required careful nursing, and that she required extra help; he had no knowledge that extra help was obtained. Some time later an inspector of the N.S.P.C.C. asked him to examine the children in the school. He found them suffering from ringworm, which he estimated had existed from three weeks to three or four months; it was obvious to anyone that something was wrong with the children. The case for the accused was that she did not know or suspect that the children had measles; she thought

the child who died had a cold, and she did not wish to alarm the patients unnecessarily; it was urged that she had committed an error of judgment rather than a crime. The jury, after deliberating for an hour, found Mrs. Fearn guilty in respect of six children, but not guilty in respect of two others. A schoolmistress, as the Recorder explained to the jury, puts herself in the position of a parent, and is responsible for taking every reasonable and proper precaution for the pupils' health. In charges of neglect the test to apply is whether or no the conduct is that of a reasonable parent or a person who put herself in the position of a reasonable parent. Thus the issue was eminently one for decision by a jury.

There was some question whether measles was a notifiable disease in the district. Asked by the Recorder, Mrs. Fearn said she believed the earlier cases were notified; she did not know if the practitioner who attended the later cases notified them. Recalled by the Recorder, the latter practitioner said he understood cases of measles were not notifiable at Bickley; during the last ten years medical opinion had, he said, taken a more serious view of measles than formerly. The accused's hesitation to call in a doctor was no doubt in part explained—though not in any way justified—by the fact that parents do not always recoup to a school the fees which the school has incurred on parents' behalf for medical attendance. The omission of a schoolmaster or schoolmistress to notify parents of a child's ill-health is perhaps a breach of humanity rather than a breach of the criminal law. Notification of the parent, however, does in some degree pass back to the parent a part of the responsibility which the parent has temporarily delegated to the principal of the school. The schoolmistress, being the person primarily responsible in place of the parent, had to exercise a discretion whether or not to call in a medical practitioner; the jury has found that she criminally failed in the exercise of this discretion. Had she informed the parents, the parents could have visited the children and exercised an independent discretion as to obtaining the advice of their own medical attendant. Parents in general may often be inconveniently fussy over the health of their children; alternatively, when faced with a bill for medical attendance, they may minimise the need of medical services when the illness is safely over. This difficulty is one of the known risks of conducting a school; there is no question that in the case under discussion Mrs. Fearn should have notified them.

Censure by Coroner's Jury.

At an inquest held at Bristol in September it appeared that a man who had fallen from the top of a 28-feet ladder was admitted to the casualty ward of the Royal Infirmary at 5.30 P.M., and sent home in an ambulance at 8 P.M. He was readmitted to the infirmary a week later and died the following day. Death was due to pneumonia following injury of a lung by a fractured rib. The man had a fractured rib on the right side, three fractured ribs on the left side (one of which penetrated the lung), and a double fracture of the right leg. The house surgeon at the Royal Infirmary, answering questions addressed him by a solicitor on behalf of the man's employer at the inquest, said that the doctor who examined the patient left a note saying that he was suffering from bruising of the right leg and of the ribs. The witness agreed that this doctor (who had since left the infirmary through reappointments and who was not present at the inquest) had failed to notice the fractures, but said it was possible not to recognise fractures. The wife of the deceased, giving evidence of subsequent examination and treatment of her husband by his own medical attendant, said that the latter told her that, as her husband was so badly bruised and swollen, he could not find out what fractures there were. The coroner's jury censured the unnamed practitioner who had first examined the patient at the infirmary. "We are of the opinion," they said, "that the doctor did not take sufficient care in the examination." The coroner remarked that he did not know whether one should have been able to detect the fracture of the ribs or not; the question of the fractured leg seemed less explicable. As the coroner observed, it would have been more satisfactory if the inquest had been attended by the practitioner who first examined the patient in the casualty ward, and also by the deceased's private doctor. One may agree that, in view of the publicity which invariably attends any censure of a member of the medical profession, it is unfortunate that the latitude allowed to a coroner's jury encourages the adding of riders attacking the conduct of persons who are not before the tribunal. However strong the prima facie case of neglect, there may be circumstances which would shed a very different light upon the case if brought to the notice of a court where the practitioner's conduct is a direct issue.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Comdr. W. P. Vicary, lent to New Zealand Division for about three years.

Surg. Lt.-Comdr. G. Kirker to *Titania*.

Surg. Lt. C. H. Egan transferred to Permanent List.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. R. M. Marshall to be Surg. Sub-Lt.

Proby. Surg. Lt. (D) R. Symmons to be Surg. Lt. (D).

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. B. Kelly, from R.A.M.C., to be Col.

Maj. and temp. Lt.-Col. E. D. Caddell to be Lt.-Col, vice Lt.-Col. H. B. Kelly, promoted.

Maj. H. L. Howell to be temp. Lt.-Col.

Lt. J. E. Swyer to be Capt.

ARMY DENTAL CORPS.

Lt.-Col. W. T. Finlayson retires on retd. pay, and is re-empld.

Maj. W. M. Ferguson to be Lt.-Col., vice Lt.-Col. W. T. Finlayson, to retd. pay.

Capts. J. McCurdy and P. P. Hogan to be Majs.

ARMY RESERVE OF OFFICERS.

Maj. R. N. Woodley, having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

Lt. R. A. M. Scott to be Capt.

TERRITORIAL ARMY.

Lt. D. J. MacMyn to be Capt.

Lt. H. Broadbent relinquishes his commn. on account of ill-health.

T. T. P. Murphy to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. G. H. R. Gibson, from Active List, to be Lt.-Col.

Maj. H. A. B. Whitelocke, from Active List, to be Maj.

ROYAL AIR FORCE.

Wing Commander H. M. S. Turner is placed on the retd. list.

STAINES COTTAGE HOSPITAL.—The men's ward of this hospital has been ceremonially named after Sir Joseph Skevington, in recognition of his work as its honorary surgeon. On the same occasion portable X ray apparatus was presented by the Staines Bonfire Society, which has undertaken to provide a massage room at a cost of £600.

OPENING OF THE MEDICAL SCHOOLS

A NUMBER of the medical schools have opened their winter sessions during the present week. The following are extracts from inaugural addresses delivered at St. George's, Middlesex, the Royal Free, and Westminster Hospitals, and at the School of Pharmacy of the Pharmaceutical Society.

MIDDLESEX HOSPITAL.

ERIC PEARCE GOULD, M.CH., F.R.C.S.,
SURGEON TO OUT-PATIENTS.

THE opening of this, the ninety-sixth winter session of the Medical School, coincides with the completion of the demolition of the remainder of the old hospital building. To newcomers this passing of the old building means no more than another stage in the big task of building the new hospital of which they have heard so much. But to those of us who have known the old hospital for years past, and especially those who in one capacity or another have been privileged to work in it, and in doing so have grown to love the sombre yet friendly frontage, the well-worn stairs, and the old familiar wards, their gradual disintegration into dust and rubble has meant more than this.

On reflection, I blame myself not so much for sentimental regrets as for the real mistake of ever looking upon such an institution as something static and fixed. And so I would have you look back just a few years to see what the hospital and school were like then, to contrast what we find with the present state of both, and consider for a moment their future.

In 1896—the year which marks the beginning of my own conscious knowledge of and interest in Middlesex—negotiations between the school and hospital were brought to a happy termination, and a fusion of the two parts into one effected. In the same year the hospital was congratulating itself upon the completion and opening of the Clacton Convalescent Home, and plans were already passed for a cancer wing to accommodate 38 cancer patients, thus freeing beds in the hospital itself devoted to these cases since the foundation of the cancer charity 96 years earlier. Shortly before—and here I quote from the report of that year—"a new and more spacious operating theatre was erected on the most approved principles. This building comprises a large theatre capable of accommodating 130 students . . . with rooms for the administration of anæsthetics and the recovery of patients, all very effectively lit by electric light and ventilated by a special apparatus in the basement." Whilst, to quote again from the same report, "to keep pace with the latest developments of medical science, a costly apparatus for photography by Röntgen rays has been provided." I can well believe that there were many connected with the hospital who in that year felt that finality in its development was as good as reached.

But let us contrast the present state of affairs with such conditions in 1896. Take the school first. The old lecture theatre still stands, the library block on the east is little changed, and much of the buildings up the staircase to the west are still the same. But the old museum, an untidy, gloomy, echoing cavern, has been replaced by the lofty, well-lighted, busy Bland-Sutton Institute of Pathology. A new department of biology tops the reconstructed department of physiology, while across the street the Courtauld Institute of Biochemistry adds its towering height to the whole group of buildings. With the exception of the chapel the whole of the hospital fabric has been built since 1896, and these changes of structure are equalled, if not exceeded, by change of function. An increase of little less than 50 per cent. in the number of beds has been accompanied by a doubling of the number of in-patients treated. Whilst then one operating theatre in use six afternoons in the week served the whole surgical staff, and was the scene of 1300 operations in the year, now four operating theatres are in use mornings and afternoons, and the number of operations has increased to over 4000. Correspondingly the number of new out-patients treated has risen from 38,000 to over 54,000.

But it is not chiefly in the volume of the work accomplished that the contrast is noteworthy. I would stress rather the profound alteration in the character of the services available for patients then and now as the fact of greatest importance revealed by the comparison. In the general medical wards the variety and number of cases which to-day receive curative treatment has increased greatly, and in the general surgical wards the same thing is no less true. In 1896 the only provision for the special branches of medicine and surgery were out-patient clinics for diseases of the skin, of eyes, of teeth, and of the nose and throat; the first three under the care of special members of the staff; the latter confided to the tender mercies of one of the assistant surgeons. To-day all these departments are staffed by two or more specialists—all have beds allotted to them as well as out-patient facilities, and, in addition, equally complete departments exist for nervous diseases and orthopædic cases. No less than nine further special out-patient clinics are conducted by members of the staff with other primary duties, and the demands for special methods of treatment applicable to out-patients are being met by two special treatment clinics. As a result, the size of the honorary staff has increased from 22 in 1896 to 36 in this year. The resident appointments available annually to recently qualified men now number 25 as opposed to 16, and the number of registrars has grown from 2 to 10.

Many, I know, are impatient of the apparently slow progress of medical science, at least in certain directions, and still more, I fear, are somewhat critical of the ever-increasing expenditure and financial demands of the hospitals. Does not the picture, admittedly incomplete, that I have drawn of the changes that a brief period of thirty odd years has seen, suggest that the advance of knowledge thus judged is not so slow after all? There are signs of a change of thought as to the method whereby medical education should be fostered and the care of the sick provided, and more than a hint that in the not far distant future the present conditions of medical practice throughout the country may be radically changed. But we at Middlesex may contemplate these changes without misgivings; rather we look forward to them with confidence.

ROYAL FREE HOSPITAL.

MAUD M. CHADBURN, M.D., B.S.,
SENIOR SURGEON TO THE SOUTH LONDON HOSPITAL FOR WOMEN.

WHEN I entered this school we were rather a big year—there were nine of us. The school was housed on this spot, but in a delightful old dwelling-house with a nice bit of garden which had belonged to a

mistress of one of the King Georges, I forget which. As the school was growing, we shortly acquired a lecture room, a corrugated iron building in the garden, and felt very big and roomy. Since that time next-door houses have been taken, and these fine buildings erected, and you are not a big year with 60 entries. Growth like this does not mean nothing; it means prosperity, it means demand.

At the time I entered it was difficult to keep a foothold at the Royal Free Hospital; we all had to leave at 6 P.M., no one there wanted us. I can remember it being said that women would never be residents, and as for getting on the honorary staff, it was unthinkable; so we set about to make our own opportunities, and I saw as a student the foundation-stone of the Elizabeth Garrett Anderson Hospital laid by Queen Alexandra when Princess of Wales—and heard that King Edward, then Prince of Wales, said "As nurses, yes, I admire you and approve, but I can't take you as doctors." Since that time the Royal Free has opened its doors freely, and we have women residents and women members of its staff; and I have seen and assisted in the ceremony of the laying of the foundation-stones of two more hospitals officered by medical women—the South London Hospital for Women and the Marie Curie Hospital—and have also seen a new and much larger Elizabeth Garrett Anderson Hospital arise from the foundations of the old one. All this growth does not mean nothing; it means, as I have said, demand for your services. The fact that some medical schools have closed their doors to women means nothing, because those doors were never really open. I, personally, am glad they have closed; I don't believe in half-open doors. I am proud to say that women have made their own opportunity, and grown their own plums—a much better way than taking them from others.

There are not now, and there never will be, enough women doctors; the supply is limited, and from the nature of things always will be.

If you are willing to work hard and if you have health, character, and average ability, you will be equal to any form of medical work. But you must put it first and do it well.

Medical work is so peculiar, so different from any other sort; it has so many aspects. It is not an exact science: 2 and 2 don't always make 4, nor does adding 2 and 2 always give the same result, and for this reason experience is perhaps more valuable than in any other profession, and experience is not gained from books, but from work. Then the personality of the doctor interacts with the personality of the patient and affects work in a way that it does in no other profession. You have heard it said that a lawyer sees people at their worst, a clergyman at their best, and a doctor as they really are; and though sometimes you will get tired of seeing them as they really are, it is much more interesting than any other way of seeing them. Then, again, you are not working for yourself, but for someone else, whom you may like, or you may dislike, but who has trusted you with her health, often with her life, and anything short of your best is a medical crime. To be always at the best level is strenuous, but there is no second best for you when you enter our profession. There is no time at which your work begins and ends. Knowledge is for ever growing, and, like Lewis Carroll's Alice, it will take you all the breathless running you can do to keep in the same place.

Very much the same qualities make a good student as make a good doctor. Much more than learning is required. A senior member of our community once said to me, "We have plenty of ability amongst us, it is character we want." That is still true.

There is an art in the management of patients which must be learned and which one learns by experience, but which comes much more naturally to some people than to others. Patients do much better led than driven—you must make them feel they want to do what you want them to do, and that is not by any means always by persuasion. There is much more in it than that; they must feel that for the moment they are the centre of the universe to their doctor and that their doctor is clever, able, and well-balanced in judgment, and that she is giving them experienced and considered advice. I recommend here also the wisdom of the serpent together with the harmlessness of the dove. It is often necessary to be high-handed, but always a lead, never a drive. Lord Knutsford, in addressing the nurses at the London Hospital, is reported as saying "there is all the difference, when the patient calls, between 'What do you want now?' and 'What can I do for you?'" This illustrates what I mean by a lead and a drive. All this is equally true, though in a different way, for doctors' management of cases.

ST. GEORGE'S HOSPITAL.

LORD RIDDELL.

THE intelligent layman views with amazement and anxiety existing conditions regarding panel practice and the medical services generally. The panel doctor is a sort of medical slave, employed, or at any rate paid, by commercial or semi-commercial institutions. He must prescribe in accordance with certain rules. If these are transgressed he is subject to serious fines and other penalties. He is also subject to penalties if he is too free in granting certificates entitling patients to disablement allowances. On the other hand, the less he does for his patients, the easier time he has. Except in cases of gross negligence, there is no penalty for under-prescribing or inattention. Most of his serious cases, and a good many that are not serious, are passed on to or drift into the out-patients' departments of the voluntary hospitals, which every day in the year except Sundays and Bank Holidays treat hundreds of thousands of patients, a large proportion of whom are on the panel. The 12 London teaching hospitals alone treat about 12,000 out-patients per day. So great has the strain become upon some of these institutions that they have been compelled to require payment of a registration fee by out-patients. It would be interesting to discover how many of the 14,000,000 panel patients are treated largely at the expense of the charitable public, and for what diseases. Perhaps we should then find out what the panel patient gets, or what it is possible for him to get for the 9*s.* per annum paid to his doctor, plus the £10 16*s.* 8*d.* per annum per 100 patients allowed for drugs, or an average of 2*s.* 2*d.* each. It is certain that, but for the voluntary hospitals, the panel system would very soon completely break down.

There are other strange factors in our medical system. Hundreds of thousands of people are making voluntary contributions to entitle them to voluntary hospital treatment. These patients are treated by doctors mostly unpaid, or who receive very meagre salaries. Side by side with this muddle we have a vast system of municipal hospitals which provide not only for lunacy, fevers, and chronics, but also for general medical and surgical cases. They have no out-patient departments and charge £2 9*s.* per

week for each bed, unless the patient proves his inability to make the payment. Voluntary hospital patients, on the other hand, need pay nothing, but in fact they provide about one-fourth of the cost of running these institutions.

There are already 14,000 panel doctors. Now the British Medical Association are proposing that the compulsory panel system should be extended to the dependants of insured persons. I confess I regard this proposal with grave apprehension. The whole subject demands careful investigation by an independent commission, for in addition to the various uncoördinated services I have mentioned there are numerous others, in the shape of maternity clinics, child welfare clinics, school clinics, &c., all of which should be coördinated as part of a more economical and efficient system. Serious issues are at stake involving not only the health of the people but the education, status, and well-being of the medical profession, which are matters of national importance.

From time immemorial doctors have been in the habit of shrouding themselves with a sort of halo of mystery. In an irreverent and inquiring age, when even the most sacred haloes have been snatched off, the medical halo has not escaped public attention. The educated man or woman wants to know what ails him or her, more or less what the medical adviser proposes to do, and what course the disease is likely to take. In short, the patient wants particulars of the diagnosis, treatment, and prognosis, and in these days unwillingness on the part of the doctor to disclose these particulars is often regarded as evidence of ignorance.

WESTMINSTER HOSPITAL.

REV. J. SCOTT LIDGETT, D.D.,
VICE-CHANCELLOR OF THE UNIVERSITY OF LONDON.

MEDICINE is an art. It is primarily remedial. It is concerned with healing and with healing with a view to realising the ideal of individual and collective health. It deals with what is from the standpoint of human life, efficiency, and happiness—the abnormal. Its ever surer diagnosis and its ever-extending research lead it to seek out not merely the symptoms but the causes of what it regards as abnormal for the very reason that it is injurious. Its practical treatment seeks, in like manner, not merely to remedy or alleviate the symptoms, but to ascertain and, if possible, to eliminate their causes.

The University has, as its very name suggests, universal science as its province. It deals with all the realities of actual and factual existence. From the standpoint of science, whatever *is*—that is to say, exists—must be treated in the first instance at least as normal. All the phenomena of our cosmic existence are *there* and are organically related in the system and development of the world. For example, the most deadly bacteria which are treated by medicine as the enemy have their laws of nature in common with all the more pleasant and desirable phenomena of the universe. They must therefore be studied thoroughly and dispassionately by biological science. Adequate description, measurement, classification and proximate explanation of the whole realm of existence lie within the realm of science, and therefore become a problem of the University.

The State stands for authority, for the government, to use Lincoln's historic phrase "of the people, by the people, for the people." In England at least, and until recent times it was sought to limit the functions of the State to the interests of defence—external and internal. The State was responsible for securing the safety and the freedom, within limits, of its subjects. It had to safeguard their continued being. Yet, as experience has growingly shown, the being of the citizens of the State can only be maintained by ever-increasing and more comprehensive endeavours to promote their well-being. Even the Englishman has become convinced, however reluctantly, of this necessity. Hence, the State, which began for the most part by being remedial, has become increasingly preventive and constructive in its constantly multiplying tasks. It is therefore constrained to call to its aid all the available resources of science and art, of knowledge, and of practical skill. For the furtherance of its work it must turn ever more constantly to the outstanding representatives and centres of science and medicine.

Hence the interdependence of the Medical School representing the art of medicine, of the University representing science, and of the State representing the authoritative and constructive government of the well-being of the people. Medicine as an art is dependent upon the whole range of the sciences. It may be affirmed that, within practical limits, the wider and more thorough the scientific knowledge of the medical student becomes, the stronger background and the more effective instrument he will have for carrying on his remedial art. This debt is always in process of being repaid; for the diagnosis of the abnormal by medicine is of service in understanding more fully the world which, as it exists, is the province of science and, as it should be from the human standpoint, is the concern, in part at least, of the State.

As the State becomes constructive, it casts the light of its great ideal over medicine and science. Medicine becomes increasingly not merely remedial, but preventive. It treats the establishment of the conditions of health as the best prophylactic against disease.

The sense of obligation to the State will develop a truly social aim, a spirit of confident, though cautious, venture, and a disposition to seek organised coöperation in the service of public health. All this involves intense and patient human sympathy and the highest consecration which subordinates the desire of individual advancement, however legitimate, to the great social end of the well-being of the community that must become increasingly the ideal and inspiration of the medical man.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

ARTHUR W. HILL, C.M.G., D.Sc., F.R.S.,
DIRECTOR OF THE ROYAL BOTANIC GARDENS, KEW.

THE general rules that guided the founders of the system of plant signatures, which were supposed to reveal the occult powers and virtues of vegetables, would seem to have been the following: Vegetables, as herbs and plants, or their fruit, seed, flowers, &c., which resemble some human member in figure, colour, quality, and consistence, were considered to be most adapted to that member, and to possess medical properties specially applicable to it.

That great naturalist, John Ray, whilst expressing his disbelief of the Doctrine of Plant Signatures as a whole, admitted that there were tangible grounds for the formation of the system. He wrote:—

"Howbeit, I will not deny but that the noxious and malignant plants do, many of them, discover something

of their nature by the sad and melancholick visage of their leaves, flowers, or fruits. And that I may not leave that head wholly untouched, one observation I shall add, relating to the virtues of plants, in which I think is something of truth; that is, that there are, by the wise dispensation of Providence such species of plants produced in every country, as are made proper and convenient for the meat and medicine of the men and animals that are bred and inhabit therein. Insomuch that Solenander writes that, from the frequency of the plants that spring up naturally in any region, he could easily gather what endemical diseases the inhabitants thereof are subject to. So in Denmark, Friesland, and Holland, where the scurvy usually reigns, the proper remedy thereof, Scurvy-grass, doth plentifully grow."

This interesting quotation from John Ray suggests to me some important drugs yielded by plants with which Kew has been specially concerned, and I will refer to two in particular, Cinchona, the source of quinine, and the plants whose seeds furnish Chaulmoogra oil, the reputed cure for leprosy. Cinchona, as you know, is native in the tropical valleys of the Andes of Northern South America, where malaria is prevalent, as it also is in other tropical regions. As to the date and manner of the first discovery of the curative effects of cinchona bark in malarious fevers we know nothing, and it seems clear that the Indians were unaware of the virtues of the plant growing in their midst until the arrival of the Spaniards. It was due to the Countess of Chinchon, wife of the Spanish Viceroy, whose name the genus now bears, that the value of the drug became known in Europe, for she brought over the first consignment of bark about the year 1639, having previously been cured by its use of an attack of fever. I need not go into all the interesting history relating to the discovery and introduction to cultivation of the various species of cinchona, but will merely remind you that Sir Clements Markham was entrusted with the difficult task of procuring supplies, and it was due to his efforts and to the efforts of Spruce, Pritchett, Weir, and Cross, and the energetic coöperation of the then Director of the Royal Botanic Gardens, Kew, that the various consignments of seeds and plants were brought to Kew and finally despatched to India in the year 1861. To the late Sir George King, and to my predecessor in office, Sir David Prain, the success of the cinchona enterprise in India is largely due, and attempts are being made to extend the cultivation in India and Burma and at Amani, in Tanganyika Territory, to help to provide the supplies required within the Empire. Chaulmoogra oil has been in use for hundreds of years by the natives of India in the treatment of leprosy, but it is only in recent years that it has come to be a matter of general interest. Thanks to the work of Dr. Power and Dr. T. A. Henry at the Wellcome Chemical Research Laboratories, to Sir Leonard Rogers, and also to investigators in the United States, we now have detailed knowledge of the chemical constituents of the oils and their therapeutic value. True chaulmoogra oil is the fatty oil expressed from the seeds of *Taraktogenos kurzii* King, and it is due to the researches of Sir David Prain, when he was in India, that this determination was definitely substantiated. I do not propose to dilate on the chemical nature of the oils, since anyone interested can study the matter in Mr. Joseph Rock's interesting account of The Chaulmoogra Tree and Some Related Species [1] but I may remind you that *Hydnocarpus anthelminthica* Pierre, from Siam, *H. wightiana* Blume, from Bombay, *H. castanea* Hook. f. & Thoms., a native of Burma, *H. woodii*, from N. Borneo, and some other species, possibly five or six in all, yield oils which are a specific for leprosy.

The United States Department of Agriculture have established plantations of *Taraktogenos kurzii* in Hawaii, and Kew has recently been active in sending seeds of this tree and some of the other useful species to those parts of the Empire [2] where they are likely to flourish, and the trees are now growing well in Ceylon, Malaya, and elsewhere.

Leper colonies have long been established in the countries where leprosy is prevalent, and here again we have a demonstration of the profound truth of John Ray's remark, which I have quoted, as well as of the urgent necessity of the systematic examination and careful observation of the vegetable products of a locality.

[1] United States Dept. of Agric. Bull., No. 1057, April 24th, 1922.

[2] Kew Bulletin, 1926, pp. 17–23; Kew Bulletin, 1927, pp. 29–56.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

CANCER IN SOUTHERN INDIA.

WRITING in the *Indian Medical Gazette* on the use of radium in cancer Lieut.-Colonel E. W. C. Bradfield, I.M.S., senior surgeon to the Madras General Hospital, makes some interesting observations on the incidence of malignant disease in India. Under urban conditions in Europe it is not always easy to obtain the after-history of cases, and in India there are special obstacles to overcome. Even in the large city hospitals many patients treated come from a considerable distance, and it may be often impossible to trace their ultimate progress. Colonel Bradfield's conclusions are consequently based largely on general observation, but even so they are particularly valuable at a time when the use of radium, as an alternative to operative treatment, is attracting many who formerly concealed their malady through fear of the surgeon's knife. From a consideration of the larger number of cases which is now available for observation, Colonel Bradfield deduces that the incidence of malignant disease in South India, contrary to what has hitherto been the general impression, is much the same as in other parts of the world. Analysis of the 411 cases admitted during 1929 leads him to revise preconceived opinions. Cancer of the breast, for instance, was supposed to be comparatively rare, but this it seems was due to women concealing the disease; in this series there are 42 cases. Far the largest single item in the list is carcinoma of the cheek and jaw; 143 cases would appear excessive in comparison with European practice, and the tongue furnishes an additional 44. How far these large figures may be due to betel-chewing is not discussed. In the treatment of cancer of the tongue radium has entirely displaced operation in this hospital. Carcinoma of the rectum and penis account for 25 and 27 cases respectively. Gynæcological cases are not included in the series, being mostly treated in the women's hospital.

BACTERIOPHAGE FOR DYSENTERY.

In Assam the local practitioners have the advantage of the advice and assistance of Lieut.-Colonel J. Morison, I.M.S., who has from the first interested himself in bacteriophage, and as head of the Pasteur Institute of Shillong is able to furnish them with the necessary material. Dr. J. London has published an account of an outbreak of bacillary dysentery on a

tea garden, in which it was decided to employ bacteriophage uniformly. In ordinary cases two doses were given daily by the mouth, on an empty stomach, the maximum number of doses administered daily in any case being four. The results were satisfactory. Blood as a rule disappeared from the stools in three to four days, and the patient became less depressed and listless, marking an early diminution of toxicity. Of 141 cases treated, 108 which received no other treatment than bacteriophage did well and were discharged cured. The remainder did not respond so well, and were eventually treated by other methods. Of these 12 died, giving a mortality of 8·5 per cent. for the whole series. No controls were kept, the only comparison available being some cases treated by other methods during the same year (1929) on other estates in the district. Of these a series of 72 is quoted, with a mortality of 12·5 per cent. Although a universal microscopical examination of the stools was not practicable, stools were examined microscopically at intervals, and the outbreak was evidently of the bacillary type. In no case were entamœbæ found. Dr. London notes as an incidental advantage that bacteriophage is much less unpopular with the average coolie than injection methods.

THE PROJECTED INDIAN MEDICAL COUNCIL.

There is every indication that the necessary preliminary steps are being taken to frame a Bill to establish a medical council for India. The action of the General Medical Council in withdrawing recognition of Indian degrees has at all events had the effect of emphasising the urgency of this measure. A conference of representatives of provincial governments and medical faculties convened by the Government of India in June expressed regret at the action of the G.M.C., and asked the Government to amend the rules so as to enable graduates of Indian universities, whose names are on the register of any of the provincial medical councils, to be recruited for the I.M.S. without registering in England; but it was at the same time unanimous that an all-India organisation should be established, and recommended that this should be called the Indian Medical Council. According to the *Pioneer* the consensus of opinion was that the Director-General, I.M.S., should be the president of the first council, and that, in addition to three members nominated by the Viceroy, one member should be nominated by the government of each province having a medical college, and one by the medical faculty of each university, one medical graduate also being elected by each province. The member in charge assured the conference that no avoidable delay would be allowed to occur in drafting the Bill, and he seems to have expressed the modest hope that it might be possible to introduce the Bill in the Legislative Assembly in the winter session of 1931.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of two cities, one county borough and three urban districts, one in the "shires," of which boot and shoe manufacture is the staple industry, and the others on the North Wales and Durham coal-fields respectively.

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Birmingham (968,500)	17·5	13·4	1·10	1·35	3·4	2·1	79/32	47	4·0
Bradford .. (289,200)	15·0	15·7	1·01	1·54	4·4	1·6	80/35	46	5·7
Bolton .. (181,500)	14·2	15·4	0·81	1·14	3·9	2·6	104/38	74	8·5
Kettering .. (31,070)	13·7	11·3	1·22	1·13	1·2	2·2	54/35	—	9·4
Wrexham .. (18,150)	17·0	12·8	0·99	1·65	1·8	3·0	38/—	26	6·4
Chester-le-Street .. (16,500)	17·2	12·3	0·79	1·27	2·7	2·0	102/49	46	3·5

Stillbirths per 100 live births: Birmingham 3·5, Bradford 4·8, Bolton —, Kettering 3·5, Wrexham 4·5, Chester-le-Street 3·5.

Birmingham.

Dr. H. P. Newsholme says the records of the city were coloured by the grave epidemic of influenza which swept over the country coincidently with a spell of bitterly cold weather. The general death-rate rose rapidly in the middle of February, reached a figure in the first week of March (46·6) higher than in any week of the 1918 epidemic, and in another four weeks was back to the normal level. The percentage increase of deaths during the first quarter of 1929, when compared with the average of the preceding five years, at age-periods was—under 1 year 15 per cent., 15 to 24 years 21 per cent., 25 to 44 years 32 per cent., 5 to 14 years 34 per cent., 45 to 64 years 68 per cent., 1 to 4 years 72 per cent., and 65 and upwards 92 per cent.—thus showing that infants came off best and young children and old persons worst. The influenzal mortality for the year affected the central, middle, and outer groups of wards similarly, and the highest rate in an individual ward was recorded in Edgbaston. On March 1st Pype Hayes Convalescent Home was opened as an emergency hospital for pneumonia cases under 5 years. Dr. Ursula Cox, who was in charge, reports that of 65 children admitted almost all were very severe cases and several moribund. Of 53 pneumonias treated 21 (or 40 per cent.) died. There was one lobar, the others being broncho-pneumonia. Resolution and full recovery were very slow among the survivors. Dr. Cox thinks the comparatively low case-fatality was due to highly efficient nursing and the fine weather which permitted open-air treatment.

There were 1611 cases of diphtheria with a case-fatality of 5·3 per cent. Immunisation is growing in popularity but is not on a scale sufficient to affect prevalence. The children and others protected during 1929 were 3759 and previously 5626. Immunisation has proved useful in controlling diphtheria in residential institutions and toxoid antitoxin is now supplied on request to medical practitioners. Scarlet fever of a mild type was excessively prevalent in August–September. Total cases were 2413 and deaths 9. Dr. E. H. R. Harries reports that of 1531 cases admitted to hospital 646 were treated with serum and 885 without. Any ordinary case of scarlet fever is now discharged on the 26th to the 32nd day from onset and desquamation is neglected. This earlier discharge has not increased the return case rate. The non-serum cases were of mild type or those admitted desquamating or with some late complication of the disease; whilst the serum group were all the severer cases admitted within four days from the onset of the disease. When the two groups are compared

it is found that the percentage ready for discharge in the minimum time was practically the same and that the serum group had a slightly lessened liability to complications and relapses. Since November, 1928, a free supply of serum has been available for practitioners, but as yet this facility has been little used.

Measles caused a death-rate in the central wards more than four times that which occurred in the "outer ring," and nearly half the deaths occurred at age 1–2. It is difficult to obtain serum for prophylaxis from measles convalescents, as required, and Dr. Harries reports that the serum of young probationers who could give a clear history of an attack of measles in childhood has been forthcoming and has proved quite successful. The central wards death-rate for whooping-cough was more than double that of the outer ring. The records of five previous years give the highest number of deaths in the first year of life, but in 1929 there were 46 deaths in each of the first two years. There were four deaths from enteric fever in 1929, and Dr. Newsholme describes an outbreak of 38 known cases affecting 19 households at Bordesley Green, which was in progress at the close of the year. It seemed evident that this outbreak was due to a localised source of infection operating during the first half of December, but a most exhaustive investigation yielded no definite clue.

The damage to eyesight by ophthalmia neonatorum was 1 baby blinded in both eyes, 1 in one eye, and 4 with other impairment, as compared with 4 blinded in both eyes, 6 in one eye, and 8 other impairments last year. Most of the cases are treated at the Eye Hospital. In 1929 those treated as in-patients numbered only 37 to 434 treated as out-patients. The hospital have set aside two specially experienced nurses for the home visiting of the cases under out-patient treatment, and the health committee are contributing towards the cost of this arrangement.

Bradford.

Dr. J. J. Buchan shows that the influenza epidemic affected Bradford differently from Birmingham. In Birmingham the general death-rate when compared with the previous five years was higher by 2·1 and the deaths were increased at every age-period but chiefly at 1–5 years and over 45. In Bradford the general death-rate was 1·5 up compared with the five years average, but the excessive mortality was almost entirely among the old. Thus a table comparing the number of deaths at each age-period in 1929 and the previous five years shows that in 1929 the deaths under 1 year were 68 less, from 1 to 2 twelve more, from 2 to 5 three more, from 5 to 15 eighteen more, from 15 to 25 two more, from 25 to 45 eight less, whilst from 45 to 65 and from 65 upwards they were 119 and 337 more respectively than the average of the previous five years. The death-rate from diphtheria (0·16) was higher than in any of the last ten years. There were 401 cases with 47 deaths, giving the high case-fatality of 11·7 per cent.

The bacteriological and pathological work has increased to such an extent as to call for an increase of staff and extension of premises. The city pathologist, Dr. M. A. C. Buckell, suggests that the standards for designated milks have played an invaluable part in cleaning up the milk-supply but require revision. Now that over 60 per cent. of the ordinary street samples are able to pass the highest grade, the stimulus of the standards is lost. The samples examined for anthrax numbered 475. Two human samples gave negative results, and 1929 is the only year of the last decade in which there has been no case of human anthrax in Bradford. Out of 51 local samples of wool, &c., *B. anthracis* was recovered from one out of 24 samples of alpaca and from two out of eight of alpaca dust. The bacillus was also recovered from 29 out of 192 samples of raw wool from the Government station at Liverpool, but from none of 158 samples of disinfected wool from the same source. The examination of 104 samples of ice-cream revealed gross pollution in many, and Dr. Buckell points out that a bacteriological standard of cleanliness is urgently needed for this article with means to enforce it.

As the result of many observations 104 chimneys were found to be emitting black smoke for more than three minutes in half an hour. Fourteen successful prosecutions resulted in fines totalling £53 15*s.* 6*d.* In one unusual case it was found that the defendant had a furnace constructed to consume its own smoke when coke was used as a fuel, but he was convicted and fined because he was using coal. A grit nuisance from factory chimneys where cheap small slack is the fuel has been under observation for five years. The slack is projected into the furnaces by the swinging shovels of mechanical sprinkling stokers. Legal proceedings have resulted in a reduction of the discharges of grit and a portion of the plant has now been removed to more suitable premises. Electricity for domestic purposes has increased greatly. The units sold for this purpose in 1925 were 4,020,401 and in 1929 were 15,486,653. Better methods of gas manufacture have reduced relatively the amount of coal carbonised. Thus in 1925, 161,036 tons of coal produced 2,156,281 cubic feet of gas and 77,527 tons of coke, whilst in 1929, 154,265 tons of coal produced 2,262,505 cubic feet of gas and 75,193 tons of coke.

Bolton.

Dr. C. W. Paget Moffatt shows that influenza did not spare the infants, as it did in Bradford and comparatively so in Birmingham. For the first quarter of 1929 the infant mortality-rate was 198 and the general death-rate 28·0, as compared with 94 and 16·7 respectively in 1928. The only age-period which did not show an excess mortality was from 10 to 25 years. Bolton had its worst year from whooping-cough since 1918, and 28 of 266 infant deaths were attributed to this cause. All except the mild cases of scarlet fever treated in hospital received antitoxin with, it is said, the most striking benefit. One of the 52 known cases of small-pox died—a feeble and infirm man of 74 years, whose death was not thought to be accelerated by small-pox. There were no cases under 20 years among persons successfully vaccinated in infancy. Two cases of encephalitis lethargica were notified and five deaths were certified of unnotified persons. Diphtheria had the high case-fatality of 11 per cent.—73 cases with eight deaths.

It is estimated that all the pail-closets and privy-middens will have been converted by the end of 1931. A special smoke inspector is to be appointed during 1930. Bolton has a permissible limit of two minutes in the half hour for black smoke, with the curious proviso that bursts of black smoke for less than 30 seconds must not be counted. Of 779 new houses 439 were by private enterprise and subsidised and 228 were municipal. Persons per house were 4·64 at the 1901 Census and 4·28 at the 1921 Census and are now estimated at 3·83. More houses are needed. Many families are living in houses which ought to be closed and a very large number are victims of that extremely greedy type of private enterprise—houses-let-in-lodgings. Dr. Moffatt divides the inhabitants of slum areas into three classes. First come those who are there only because they have slum incomes and whose dwelling is frequently an oasis of cleanliness in a desert of dirt. They must have decent houses at a price they can afford. Second comes the class with slum habits, who could pay for a reasonable house, and many of whom would respond to a better environment. Third comes the class with slum habits and slum incomes who must be housed by the community and made by strict supervision to comply with a reasonable standard of living. Dr. Moffatt records with emphasis his conviction that Bolton's slum problem will never be solved by the provision of housing estates with 11 houses to the acre.

Kettering.

The report submitted by Dr. Cecil B. Hogg, who succeeded Dr. John Allison on Jan. 1st, 1930, after acting as assistant for a month, conveys the impression of an active authority well supported by voluntary

bodies. Although 11 deaths were ascribed to influenza in February to April, the outbreak subsided quickly, and the death-rate from respiratory diseases shows that Kettering was let off lightly. A joint hospital board provides accommodation for infectious diseases and small-pox for the town and other districts. There were five deaths among 88 cases of diphtheria admitted. For the town alone 71 cases and three deaths were recorded. Among the school-children 35 cases of heart disease (as compared with 43 in 1928) were found and are kept under supervision. Ninety-five maternity cases were admitted to the beds subsidised at the General Hospital. For the second year in succession the Maternity and Child Welfare Voluntary Committee won "The Astor Shield" for the most effective local Baby Week campaign in the country. The school ophthalmic, dental, and orthopædic clinics are available for the pre-school children. A folk dance class during the winter was very popular among the "centre" mothers. Additional land has been acquired for playing-fields and a new sports pavilion is being built in the North Park. Despite the prolonged drought a full water-supply was maintained. Wells supplying 56 houses were adversely reported upon by the analyst, and 69 such houses were provided with town's water. Scavenging is being improved by the adoption of dustless refuse-collecting wagons.

Wrexham.

Dr. T. P. Edwards says that the water company maintained an uninterrupted supply during the drought. The rainfall was 31·0 in., only 4 in. below the average, but 17·19 in. fell during the last quarter, leaving only 13·81 in. for the rest of the year. The possibility of using for an additional supply the well which serves the swimming baths was considered, but this water, although excellent in appearance, was found when analysed "to be grossly contaminated with excremental pollution." If swimming baths supplied with pure water need a chlorino-filtration installation, such a process would seem to be essential for the Wrexham baths. During the year the Cheshire authorities raised the question of the condition of the Gwenfro which flows through the town. This river is subject to industrial pollution in the district of Brymbo and also receives the rural district's effluent, before entering the town. Samples taken by Dr. Edwards seem to indicate that the river arrives polluted, purifies itself as it flows on, and is again polluted by receiving the effluent from the borough sewage farm a few miles lower down. Dr. Edwards points out that complaints were made when the river water was very low and that, when the urgently needed re-sewerage of the borough is put in hand, storm water can be diverted and the condition of the sewage farm so improved.

Municipal houses built numbered 68; 57 more have been begun; and 30 acres of land have been purchased for the erection of a further 320. There are may applications for houses and insanitary areas are awaiting demolition. Another sign of the need is that 30 per cent. of the confinements took place either in apartments or overcrowded houses, which last should also stimulate the negotiations with the County Council for the provision of a joint maternity hospital.

Chester-le-Street.

Dr. W. E. Roper Saunders (who was recently appointed M.O.H. of Rowley Regis) shows that but for the influenza epidemic the health statistics would have improved. As it was they were no worse. The death-rates for 1927–28–29 were 12·5, 12·9, and 12·3 and the infant mortality-rates 119, 105, and 102. Evidences of the epidemic were—13 deaths, compared with 3 in 1928, were ascribed to influenza; 75 of the 204 deaths occurred in the first quarter, and 37 in March; 8 of the 15 deaths of infants after the first month were due to pneumonia, and 7 of the 13 deaths at 1 to 5 years age-period to pneumonia and bronchitis; and 27 of the 36 notifications of pneumonia were made in the first quarter. Dr. Saunders says there is much misunderstanding as to what cases have to be reported; he points out that the only non-notifiable pneumonias are those secondary to some disease other than influenza. The joint Isolation Hospital has insufficient beds for the districts which it has to serve. The use of antitoxin is claimed to have shortened the stay of scarlet fever cases by a week. More institutional accommodation is needed for adult female tuberculosis cases, and it is suggested that poor-law hospitals (taken over) will provide needed beds for advanced cases who ought to be within reach of their relatives.

The pollution of the local burn by domestic refuse is less than it was but industrial pollution remains. Refuse disposal is unsatisfactory. Dealers who distribute food and toys in exchange for rags and bones have been stopped under Section 73 of the Public Health Act, 1925. Of the numerous motor-bus companies working the district only one makes a thorough attempt to cleanse its vehicles. In one area there are 300 worn-out damp houses. The Chester Moor Colliery Co. are improving their village very much, pulling down obstructive buildings, converting back-to-back into through houses, and putting in electric light and baths.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 20TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 61 (last week 75); scarlet fever, 1696; diphtheria, 1290; enteric fever, 64; pneumonia, 409; puerperal fever, 49; cerebro-spinal fever, 9; acute poliomyelitis, 21; acute polio-encephalitis, 2; encephalitis lethargica, 19; dysentery, 6; ophthalmia neonatorum, 93. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 23rd–24th was as follows:—Small-pox, 200 under treatment, 2 under observation (last week 216 and 1 respectively); scarlet fever, 1426; diphtheria, 1708; enteric fever, 22; measles, 100; whooping-cough, 118; puerperal fever, 24 (including 12 babies); encephalitis lethargica, 119; "other diseases," 32. At St. Margaret's Hospital there were 17 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 10 (4) from measles, 3 (1) from scarlet fever, 11 (2) from whooping-cough, 23 (3) from diphtheria, 66 (20) from diarrhœa and enteritis under two years, and 11 (1) from influenza. The figures in parentheses are those for London itself. No death from small-pox was returned in the month of August from areas outside the great towns.

The death from enteric fever outside London occurred at Walthamstow. Willesden reported 4 deaths from whooping-cough, Leeds 2. Derby and Liverpool each reported 2 deaths from diphtheria. Fatal cases of diarrhœa numbered 9 at Liverpool, 4 at Portsmouth, 3 each at Burnley and Leeds, 2 each at Birmingham, Birkenhead, and Manchester.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 42 per 1000 births), including 60 in London.

THE ROYAL EYE HOSPITAL, SOUTHWARK.—Last year there were 716 in-patients and 22,149 out-patients at this hospital. After carrying on an increasing work for 70 years the hospital's resources are now so seriously diminished that, failing increased support, a curtailment of its activities can hardly be avoided. It is desired to increase the number of beds from 46 to 80, to enlarge the out-patients' accommodation, and to provide a suitable nurses' home. It was stated at the annual meeting that this is the only large ophthalmic hospital in London that has not been rebuilt in the last 30 years. To extend the hospital, provide 80 beds, and afford adequate accommodation for surgeons, post-graduates and nurses would cost £100,000. There was a deficit on last year's working of £1287.

OBITUARY

CHARLES POWELL WHITE, M.D. Camb., F.R.C.S. Eng.

Dr. Powell White, sometime director of cancer research at the University of Manchester, died suddenly at Streatham on Sept. 26th after two years' illness. The fourth son of Prebendary L. Barrett White, D.D., he was born in 1867 in London, and was educated there at St. Paul's School. He then went to Sidney Sussex College, Cambridge, and later to St. Bartholomew's Hospital, whence he qualified M.R.C.S., L.R.C.P. in 1894 and M.B., B.Chir. Camb., in 1896, in which year he also became F.R.C.S. Eng. Shortly after qualifying he obtained a studentship in pathological research and this success doubtless influenced his future career, for his whole life thenceforward was devoted to pathology. He became senior demonstrator in that subject at Yorkshire College, Leeds, and later assistant pathologist to St. Thomas's Hospital. Later he migrated to Manchester and it was here that his chief work was done. As pathologist to the Christie Hospital for Cancer, he had access to material of which he made full use.

Powell White will be missed by his fellow pathologists (writes one of them). He was first treasurer of the Pathological Society of Great Britain and Ireland, and had for many years been a well-known and well-liked figure in British pathology. He really loved knowledge and its pursuit, and his evident sincerity earned the respect of everyone even if they had no chance of knowing him well enough to be fond of him. At Leeds, St. Thomas's, and Manchester he went on in his steady way and under conditions which were not always exactly to his liking, and in spite of a curious ingrained laziness he did a good deal of notable original work. In 1899 he published a paper on the classification of tumours which attracted attention and was widely quoted in days when the orderly arrangement of the facts was more important than it is now. In 1902 he delivered and published in THE LANCET the Erasmus Wilson lectures at the Royal College of Surgeons on the pathology of tumours. A small book in 1912 summed up his more considered judgment on this subject, and as late as 1927 he wrote an account of a variety of queer tumours which had come to his notice, mostly at the Christie Hospital in Manchester. He was early in the field (1909) with experiments on the influence of agents such as oleic acid and scharlach in causing abnormal epithelial growth and metaplasia, and a loafing holiday at Criccieth catching lizards along the sea-front evolved into a very interesting account of the regeneration of the lizard's tail, though characteristically the paper did not appear till 11 years after the material had been pickled. In Manchester, partly in association with Lorrain Smith and Mair, he worked at the microscopical characters and indentification of fats and lipoids. He spent a great deal of time studying the presence of traces of the heavy metals in tumours, and in 1925 published an inquiry into the statistical correlations between the various constituents of urine—a mode of approach to the action of the kidney which no one else seems to have had the courage to tackle. His attitude towards his subject, can, however, best be appreciated by reading the earlier chapters of his "Principles of Pathology" (1927) in which he found scope for preaching the broad generous creed by which he worked. The fundamental principles of pathology are, he said, the same as those of biology, to wit (1) all living organisms grow and reproduce themselves, (2) the young tend to vary from their parents, (3) all living organisms tend to adapt themselves to changes in the environment. He insisted, too, that there is no living substance, only living things. And on this basis of what seemed to him (and to many thoughtful people) the simple truths of the post-mortem room, he proceeded to erect a skeleton outline of pathology—not with complete success, but in a stimulating provocative way which must do good to our general outlook. The book has probably not been widely read; it is certainly no good for examinations; and, indeed, throughout his career Powell White was more a pathologist for pathologists than a pathologist for undergraduate students. Two years ago he was hopelessly crippled with a stroke, and his death is a happy release from an existence which he found very irksome.

PHŒBE MILDRED BIGLAND, M.D., D.P.H. Liverp., M.R.C.P. Lond.

Dr. Phœbe Bigland, who was prominent in the medical life of Liverpool, died on Sept. 24th after an illness extending over several months. The eldest daughter of Canon Powell, of Knotty Ash, she decided early to adopt medicine as a career and entered the University of Liverpool, qualifying M.B., Ch.B. with honours in 1911. She took her M.D. in 1912, and the D.P.H. in 1914, becoming M.R.C.P. Lond. in 1919. After holding resident appointments at the Liverpool Stanley Hospital and at the Royal Free Hospital she became John W. Garrett Fellow in pathology and demonstrator in pathology at the Liverpool University. During the war she was appointed acting physician at the Stanley Hospital and Liverpool Royal Infirmary, where she did much valuable work as locum tenens for members of the staff absent on war service. For 13 years she held the post of assistant lecturer in pathology, and was never happier than when she was assisting the late Prof. Ernest Glynn in teaching pathology and in the research work which they undertook together. Their work, published jointly, included observations on the standardisation of bacterial vaccines and improved methods of standardising them, and also a report to the Medical Research Council, published as a green book (No. 107) in 1926, on the effect of treatment on the Wassermann reaction of syphilitic patients. As clinical assistant to the venereal department of the Liverpool Royal Infirmary, Dr. Bigland had ample opportunity to study syphilis, and her more recent contributions to medical literature are mostly concerned with various aspects of this subject. Her teaching appointment in pathology terminated when the pathological department was reorganised after the death of Prof. Glynn. When the Crofton Hospital for Women was opened Dr. Phœbe Bigland was appointed physician, and she took up the work with her usual strenuous zest. She was interested in the teaching of birth control in suitable cases and was medical officer to the Mothers' Welfare Clinic in Liverpool.

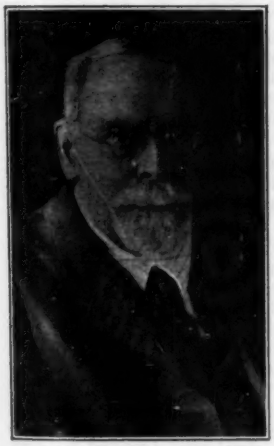
Dr. Bigland was an energetic member of the Medical Women's Federation, and had held the post of President of the Liverpool Association. She was largely instrumental in forming a students' branch

with the object of educating students in medical ethics and in helping them to solve the special problems incidental to their work. She had always associated herself with all movements for the welfare of medical students and colleagues, and entered wholeheartedly into the life of the University. Her affectionate disposition endeared her to many friends who sincerely mourn her loss. Many will have memories of delightful evenings spent in her home in Rodney-street. She married Dr. A. Douglas Bigland in 1918, and leaves also two young children, to whom the sympathy of all will be extended.

WALTER EDMUNDS, M.Chir. Camb., F.R.C.S. Eng.,

CONSULTING SURGEON, PRINCE OF WALES'S HOSPITAL, TOTTENHAM.

Mr. Walter Edmunds, who died at Worthing on Sept. 23rd, at the age of 80, retired from active surgical work in London nearly 20 years ago, but is well remembered at the Prince of Wales's Hospital, Tottenham, to which he was attached. He received his medical education at St. John's College, Cambridge, and St. Thomas's Hospital where, after qualifying M.B. in 1875, he held three successive resident appointments. In 1877 he became M.Chir. Camb. and F.R.C.S. Eng., and in the same year went out to serve as a surgeon in the Turco-Russian war. After his return to London he was appointed the first resident medical superintendent of St. Thomas's Home for paying patients, and soon embarked on the joint experimental and clinical researches that were to employ him for most of his working life. He published in 1891, jointly with Sir Charles Ballance, a book on the Ligation of the Great Arteries in Continuity, with Observations on the Nature, Progress, and Treatment of Aneurysm, and then turned his attention to the thyroid gland. Mr. Edmunds was a keen experimental investigator, most of his work being done at the Brown Institution. He was one of the first to be successful in inducing myxœdema in the monkey, and later proved the possibility of saving dogs from the immediate effect of complete thyroid and parathyroid deprivation by the liberal use of milk and of calcium injections. He never subscribed to the idea, at one time prevalent, that the parathyroids had the same function as the thyroid gland itself, and he lived to see his convictions verified.



MR. WALTER EDMUNDS.

[Photograph by Edward Bowles.

At one time he kept, by the courtesy of the late Mr. Brailey, the ophthalmic surgeon, a herd of thyroidless goats on the latter's farm in Sussex. The milk from these goats was sent daily to St. Thomas's Hospital and was used in the treatment of exophthalmic goitre, under the supervision of the late Sir Hector Mackenzie. The conclusion arrived at was that nutrition was improved but that no definite curative results could be obtained. A trial of the dried blood also proved disappointing. Kocher's operative results he followed with the keenest interest. Edmunds was not a man to advertise himself or his doings, and his published results are in no way commensurate with the extensive knowledge he acquired of thyroid conditions. The earlier volumes of the *Journal of Pathology and Bacteriology*, however, contain a series of articles by him on this subject which have not lost their interest. His book on the "Pathology and Diseases of the Thyroid Gland," published in 1901, was an expansion of the Erasmus Wilson lectures he gave earlier in the same year at the Royal College of Surgeons, and published in THE LANCET.

At the age of 50 he was appointed surgeon to the Prince of Wales's General Hospital, Tottenham, and gave ten years of continuous service to the hospital before he retired in 1911. Especially in the out-patient department and in the wards for children his memory will live, for he had a passionate devotion for children which had a further outlet in his work for the local branch of the Invalid Children's Aid Association. He was for a time also on the staff of the Evelina Hospital for Children. Mr. Edmunds did not have the distaste for any sort of administrative work from which men who like research often suffer. During nearly the whole of his time at the Prince of Wales's Hospital he was a representative of the medical staff on the committee of management, and after his retirement, when he became consulting surgeon, he remained a governor of the hospital. He was fair-minded, patient in listening to argument, and clear-headed. These qualities were conspicuous not only in the medical committees over which he presided but also in ordinary social intercourse. His generosity was remarkable—for example, he gave to the hospital its first X ray installation. His critical attitude prevented him from being popular with all and sundry but gained respect and trust, and his post-graduate teaching was widely appreciated.

Mr. Edmunds had many hobbies. He was greatly interested in music, and found pleasure in the splendid collection of classical gramophone records which he had accumulated. His little book on "Sound and Rhythm" was largely inspired by his musical tastes. Colour photography was also a hobby. He used the Lumière process, and some may remember his demonstration, at the Royal Society of Medicine, of a fine series of photographs of the rashes of the infectious fevers. He retained to the last his interest in the Invalid Children's Aid Association. He took an active part in the selection of the sites of homes for children suffering from heart disease, and also in the establishment of the convalescent home of the association at Worthing, a place to which he was connected by family ties, and where death unexpectedly overtook him just before his return to Putney after a summer holiday. He was a loyal friend, widely read, a stimulating companion, and an excellent host.

JOHN O'DONNELL, M.B.R.U.I.

Dr. John O'Donnell died on Sept. 22nd at his home in Merrion-square, Dublin, after a long illness. He was 62 years of age. Born in County Donegal, he received his education at the Cecilia-street School of Medicine, Dublin, and took the medical degrees of the Royal University of Ireland. Having filled the office of resident physician in the Mater Misericordiæ Hospital he was appointed assistant physician, and subsequently visiting physician, remaining in the last-mentioned office to his death. In early life he suffered from a pulmonary infection, but appeared to make a

satisfactory recovery, and lived the life of a busy physician for the past 25 years with little disturbance as regards his health. He took a special professional interest in the disease which threatened himself, and his opinion as a consultant was constantly sought in connexion with diseases of the chest. He was an admirable teacher, clear, patient, and painstaking. He avoided all publicity, but he was held in great regard by his professional brethren. His elder brother, Cardinal O'Donnell, Archbishop of Armagh, died two years ago. Dr. O'Donnell leaves a widow and five daughters.

THE LATE SIR NEVILLE HOWSE.

Dr. LEWIS SMITH writes: "Sir Neville Howse died on Sept. 21st after a few weeks' illness in a London nursing home. In March he came over from Australia with his wife and three daughters for a long-promised holiday, and threw himself with characteristic zest into its enjoyment. He appeared in excellent health, and it was delightful to share his appreciation of an English summer. His untimely death comes as a sad blow to his many friends in this country and Australia.

"Howse possessed a dynamic personality. As a medical student of the London Hospital, his exceptional powers were early recognised by his fellows, and his nickname of 'Norter' (a contraction of 'Snorter,' meaning someone outstanding) is still remembered among the men of his day. I first met him in 1896 at the 'London,' on his return from nine years' work in New South Wales where he had built up a large practice. Within 12 months he passed the Primary and Final Examinations for the Fellowship of the Royal College of Surgeons, and was appointed house surgeon to Mr. Hurry Fenwick. As a hospital resident his energy and enthusiasm were unbounded, and a stimulus to his younger colleagues. Our hospital friendship never waned, and we remained in constant touch for 34 years.

"As a doctor he was a shrewd diagnostician with a strong bias towards surgery; he was a bold operator, and never forgot the patient in the disease. In the Army Medical Service his unusual powers of organisation and administration won rapid recognition; his decisions were quick and fearless, and he never shirked responsibility. His success as a statesman was, perhaps, his most phenomenal achievement. Howse was a comparatively poor speaker, whose actions spoke louder than his words. His vision and judgment were almost uncanny, and on a visit to Australia in 1928 it was astonishing to find the influential position the erstwhile doctor had attained in the political world.

"Neville Howse was indeed a remarkable figure. He possessed a colossal 'drive' and power of concentration, with a wonderful memory. He worked and played at high speed, and a game of fives, or a tussle over some knotty surgical problem with 'Norter' was something to remember. He hated slackers and never learned to suffer fools gladly. It pleased him to dissemble his enthusiasms under a gay, careless exterior and an extravagance of speech. At hospital few knew how often he read for hours before breakfast to give him time to appear unoccupied during the day. His personal charm, keenness, and love of sport made him a born leader of men. He was utterly fearless, always ready for any risk, and many are the stories of his bravery at the front, where he seemed to bear a charmed life. He was curiously modest, hated ostentation, worshipped efficiency, and despised social amenities. He was essentially a 'big' man, and in some ways a law unto himself; he rarely sought to please and did not always avoid the other fellow's corns. He was intensely patriotic, an Imperialist who loved Australia, the country of his adoption. A devoted parent, he believed strongly in the claims of family ties and the world will never know his many kindly charities. As a statesman, he had ever before him the advancement of medicine; the newly established College of Surgeons of Australia owes much to his efforts, and he was unwearied in sending young Dominion doctors to study in the Mother Country. Recent legislation for an Imperial post-graduate centre in London won his whole-hearted interest and support. Service and efficiency were his life ideals."

CORRESPONDENCE

A DANGEROUS PHANTASY.

To the Editor of THE LANCET.

SIR,—Some months ago a young woman was murdered as she was crossing a heath near London in company with her sister. The victim was attacked in broad daylight by a man who jumped from a clump of bushes and stabbed her with a large knife. The crime is of interest to the psychiatrist in that it was, apparently, motiveless; the murderer did not know the woman he killed and could give no reason for his act. But apart from the fact that we know that no act is unmotived, the point of special interest in the case, I venture to think, is that some months previously the man had given himself up to the police as the perpetrator of another murder in Reading, for which he was proved to have been in no way responsible.

An account appeared in the press a week or two ago of a boy of 17 who was charged with the murder of an unknown person, and released. He had informed the police that he had hit a boy on the head with a piece of iron and thrown him into a canal. The canal was dredged without result and the police received no news of the disappearance of a boy. In discharging the youth the chairman of the magistrates is reported to have said: "You have given the police a great deal of trouble. So far as we know, you are telling deliberate untruths. So we are very glad to get rid of you." This surprisingly casual method of dealing with the case would seem almost to be tempting providence. It is surely evident from the circumstances that the boy is abnormal, and that his mental condition is in need of investigation and treatment. I am aware that it is not an infrequent occurrence for people to give themselves up to the police for crimes with which they have only an imaginary connexion. The fact remains, however, that in some cases at least, the phantasy is not psychologically sufficient and leads later to deeds.

I am, Sir, yours faithfully,

FREDERICK DILLON.

Wimpole-street, W., Sept. 25th, 1930.

COG-WHEEL BREATHING.

To the Editor of THE LANCET.

SIR,—Dr. Adams apparently suggests that so-called cog-wheel breathing may, in certain cases of tuberculosis, be due to an increased conduction of the cardiac first sound through areas of congestion. I am grateful to him for his suggestion. In some cases of consolidation of lung or of mediastinal tumour the heart sounds can be heard plainly through the solid material, but personally I should doubt whether they would be audible over tuberculous lesions, unless the latter were gross or massive. Further, it should be possible to identify such sounds as cardiac sounds, rather than as breath sounds, by their lack of dependence on respiration. An aneurysmal dilatation of a vessel exposed in a tuberculous cavity might also produce a local murmur somewhat resembling cog-wheel breathing, but suggestions such as this and Dr. Adams's are difficult to prove and are not satisfactory explanations of "air-waves" as described in my article.

I am, Sir, yours faithfully,

G. T. HEBERT.

St. Thomas's Hospital, Sept. 29th, 1930.

LAXATIVES AND COLITIS.

To the Editor of THE LANCET.

SIR,—In opening a discussion at Winnipeg on functional disorders of the colon (see THE LANCET, Sept. 20th, p. 635), Dr. Edmund Spriggs gave an exposition of the modern conception that the habitual use of laxatives is a cause of catarrhal colitis, and that the medical remedy of election in ordinary cases of constipation is liquid paraffin. The practitioner's difficulties, however, are not solved by the adoption of this standpoint, for there are at least two objections to its use.

(1) Paraffin, being an indigestible insoluble hydrocarbon, must cause a thin film covering the absorptive mucous surfaces of the intestine, thereby interfering directly with the digestion and absorption of foodstuffs. Also it would similarly surround particles of food and again interfere with the mechanical approach to them of digestive juices—in both cases placing a considerable and certainly undesirable obstacle to nutrition. Indeed, there are said to be cases of wasting due to the use of paraffin, although I have myself not met with an example.

(2) It must be admitted that there are many individuals whom paraffin preparations do not suit, causing in them unpleasant gastric and intestinal disturbance, with or without achieving its desired object. This may take the form of repetition and nausea, audible gurglings, rumblings, frequent tenesmus and useless urgent calls to stool and deflation, discharge of inordinate amounts of foul-smelling gas, uncertainty as regards time of defæcation, the very emptying of too large a portion of the colon that Dr. Spriggs deplores as a frequent sequel of taking ordinary laxatives, subjective feelings of intestinal congestion, with physical lassitude—not to mention the usual complaint of seepage, and the necessity of carefully watching and adjusting the dose from day to day.

In these circumstances the practitioner does not feel great confidence in the efficacy or desirability of liquid paraffin. He knows from experience that the large bulk of patients who come to him complaining of constipation are made most comfortable by the use of the cascara group. He is now told on high authority that the regular use of these remedies—and some remedy is inevitable, constipation not being usually curable by diet and exercise—causes colitis. What is he to do? I should value suggestions on alternative remedies, of a harmless nature and yet efficient and confidence-giving.

I am, Sir, yours faithfully,

L. J. GREEN, M.R.C.S.

High-road, South Tottenham, N., Sept. 28th, 1930.

PRURITUS ANI ET VULVÆ.

To the Editor of THE LANCET.

SIR,—It surprised me to read Mr. Lockhart-Mummery's condemnation of the treatment of pruritus ani by X rays. I have so treated it since 1922 with success, and without any sign of cancer accruing from the treatment. This year I have treated three cases by X rays, high frequency spray from glass vacuum electrode, and ultra-violet rays. The X rays were applied on four occasions at intervals of ten days, and heavily filtered; the high frequency and ultra-violet rays three times weekly, with radiant heat to the vulva and anal region. The X rays were filtered through 4 mm. aluminium and 3/5ths B. tint sabouraud et noire pastille dose at 20 cm. target distance.

X ray workers are well aware that soft or long-wave rays were the cause of cancer in pioneer workers, but now, with suitable filtering, cancer is not likely to become a complication in the hands of experienced radiologists. The X ray treatment produces severe irritation for 48 hours, when the itching subsides. The vacuum electrode charged with a weak current and applied for 20 minutes, with a five-minute interval of rest, is very soothing. A hot-air douche will relieve the burning sensation complained of, and if followed by radiant heat from a 1500-watt tungsten lamp is much appreciated.

Intelligently applied, X rays should not induce cancer on the anal and vulvar regions.

I am, Sir, yours faithfully,

JOHN MCGINN,
Radiologist to Newport Infirmary; Hon. Consultant Electro-Therapeutist, Welsh Memorial.

Sept. 29th, 1930.

BENZYL-CINNAMATE.

To the Editor of THE LANCET.

SIR,—In their article in your issue of Sept. 13th (p. 576) on the treatment of pulmonary tuberculosis by benzyl-cinnamate, Drs. T. W. Wadsworth and J. T. Flanagan do not refer to previous work on this subject done in France, Belgium, and England, although they have adopted a method of dosage closely similar to the method at which I arrived after many years of experiment. Their recommendation not to use this product in renal disease does not accord with the published experience of myself, Cathelin and Brule, Tissot and Chaignon, and Gainsborough, using my own preparation.

I am, Sir, yours faithfully,

Paris, Sept. 22nd, 1930. J. JACOBSON.

GOSPORT HOSPITAL.—The work of this institution has increased so rapidly of late that it is proposed to enlarge the wards and the administrative blocks. The cost, including a substantial addition to the endowment, is estimated at £15,000, towards which over £9000 is in hand.

PANEL AND CONTRACT PRACTICE

Health Insurance, Present and Future.

Mr. Arthur Greenwood, Minister of Health, addressing the annual gathering at Blackpool of the National Conference of Friendly Societies, said that in 1911 pessimists made certain that the Insurance Act was going to kill the friendly societies. As reported in the *National Insurance Gazette* of Sept. 27th, he continued:

"I should imagine it is true that you are stronger to-day than ever you were. That, I think, is the answer to those who believe that there cannot be harmonious coöperation, to the advantage of both sides, between the State and voluntary societies such as you represent. The whole community outside your own membership is under a very deep debt to gratitude for the services of the voluntary societies. Our whole structure of National Health Insurance is built up on the experience of the friendly societies.

"Without that experience, Mr. Lloyd George's original scheme would have been utterly impracticable, and you are not only the inspirers of that scheme; you are not only the movement which gave it its first background of experience; you are the movement that is making it possible to work that system to-day with a maximum of economy and with a maximum of result."

After dealing with the increase of sickness claims and the Cabinet's survey of social insurance, Mr. Greenwood remarked:

"If there is anybody in the country who thinks that, sooner or later, I am going to produce a grandiloquent measure that is going to cover the whole field of social provision in a final form, they might as well get it out of their minds, because a Bill of that kind would take the whole Parliamentary time, not of one session, but of three or four, or perhaps five sessions at the very least; but it is desirable that those of us who are interested in and working in this field of social activity should have a picture of what it is that we want to achieve.

"One of the great weaknesses, it seems to me, of very much of our public activity in the past has been that we have lived from hand to mouth, and from year to year, without any practical constructive vision in front of us, and without deliberately pursuing a goal, step by step. I am now requiring local authorities to sit down and look ahead for five years, and to visualise their needs for five years, and to plan on a five years' programme. It is desirable that we should have a clearly conceived goal, and that we should build towards it; and I hope that we may get out of the survey a better picture of the kind of England we ought to have, so far as social provision is concerned.

"The wise men of National Health Insurance, I believe in the days of the first Labour Government, pointed to two gaps in our health insurance scheme. I do not think we can regard as satisfactory one which stops short at a general practitioner's service—which does not provide specialist and consultant services. It is a torso of a scheme unless you can be certain that the insured person is going to have available all the best resources of medical knowledge and medical skill. The second is a very grave and serious problem to-day. We cannot defend the loss of 3000 mothers in childbirth every year. I make bold to say that we shall find that at least 60 per cent. of those deaths are avoidable. We cannot rest content until more methods are in operation to deal with the problem. Those are two problems, both of them involving finance, both of them involving protracted negotiations with the approved societies and the medical profession, negotiations that are bound to be protracted if the scheme is to work on sound lines."

The two problems, said Mr. Greenwood, left aside altogether the enormous question as to whether we should bring into the scheme people who are outside it, and the question whether the scale of benefits was as high as it ought to be. A comprehensive scheme would cost an enormous sum, and any such scheme could only be carried into effect on the basis of maximum agreement with and coöperation between all those concerned. "Our system of social insurance," he concluded, "is deeply grounded in the national life; it is rooted there and we cannot afford to scrap that great edifice which we have built up; we cannot afford to tear it down; we cannot afford to bring in new methods unless we have experience to guide us. On the contrary, I look forward to an insurance system which is far more intensive, far wider in its scope than the present system, far more effective in its operation, and which will lift from the back of the ordinary man and woman the fears against those vicissitudes which may come to any of us."

Subscriptions to Hospitals and Clinics.

About 140 approved societies and branches have adopted the arrangements under which they can, out of their disposable surpluses, make occasional subscriptions of an eleemosynary character to hospitals and charitable institutions. Such subscriptions or donations may not exceed in any one year an amount equivalent to twopence per member calculated on the membership as given in the valuation report. They must be in the nature of voluntary gifts, and cannot be made by way of payment for any specific benefit received by an individual member of the society. These payments are, of course, quite distinct from the payment made direct to insured members entitled to some particular additional benefit.

A further development under the new additional benefit relating to approved charitable institutions has been the establishment by the British Red Cross Society of the Peto-place clinic for rheumatism. Approved societies responded to the Society's appeal for funds for establishing such a clinic in London, and it is hoped that this central clinic will soon be encircled by subsidiary clinics in other areas. A low scale of charges for insured persons has been arranged, a full course of treatment costing not more than 25s. About one hundred approved societies and branches have included in their new schemes of additional benefits the particular benefit which will enable them to pay the costs of any of their members attending this clinic.

Additional Benefits under the National Scheme.

There was no material change last year in existing schemes of additional benefits, the net expenditure by approved societies on additional benefits being rather less than in the previous year. In some cases this may be the beneficial result arising from extensive treatment given in the past. That at all events is the view of the Minister of Health. The demand for dental benefit, however, shows in many instances an increase, caused possibly by the shortening of the waiting period for the benefit from the fifth to the third year of membership in an approved society. The net expenditure by approved societies in England on dental benefit was about £1,730,000, a reduction of 9 per cent. on that of the previous year. Expenditure on ophthalmic benefit amounted to nearly £280,000, a slight increase. Over £400,000 was spent on the remaining benefits.

Nearly 9000 inquiries and complaints relating to additional benefits were received by the Ministry from insured persons, most of them being in respect of dental benefit. As a consequence of the recognition and adoption by a large approved society (whose administration had been the subject of Departmental inquiry) of the standard scale of charges of the Dental Benefit Council, complaints from insured members ceased altogether, in contrast to the pre-

vious experience when complaints from members of that society had been continuous and numerous.

The Dental Benefit Council has submitted to the Insurance Joint Committee proposals for the establishment of a dental service and for the supervision of that service, and has recommended their embodiment in regulations to govern the administration of dental benefit by all approved societies. The proposals include a revised scale of fees for work of a specified standard, a specification of materials to be used in dental work, and the procedure to be followed by insured persons, approved societies, and dentists in relation to applications for dental benefit. The proposed new scale of fees, which was arrived at by agreement between the approved societies and dentists represented on the Council, is estimated to produce a reduction of about 7 per cent. on the scale hitherto in force. The Council has also submitted proposals for the method of settlement of disputes between societies and dentists, and for the establishment by the Minister of a disciplinary tribunal to deal with charges of breach of the conditions of service. The Council has had under consideration the establishment of one or more experimental dental clinics for the treatment of insured persons, and has produced a detailed scheme for the provision of an experimental clinic in London.

Increased Women's Claims in Wales.

Mr. John Rowland, Chairman of the Welsh Board of Health, in an address to the Association of Welsh Insurance Committees in session at Mold, said:

"It is clear from the regional medical officers' figures that societies are giving increased attention to women's claims, especially those of young married women, but they are not sufficiently alive to the necessity for giving special attention to claims where the cause of incapacity is such as should not usually result in a prolonged illness. I am afraid that societies do not refer cases sufficiently early to the regional medical officer. An improved sick visitation system would help in this direction. This feature, which has proved so helpful to the old friendly societies, is now not so prominent, but I venture to say that societies which still provide efficient sick visiting have far better valuation results than those which have now become more or less dependent on the regional medical officer system.

"I think that approved societies could exercise more discrimination and care in the selection of cases for the regional medical officers. Many cases have been referred to the regional medical officers which would never have been sent if the sick visiting system of the societies concerned functioned properly."

Proposed Extension of Service in Scotland.

The Edinburgh Burgh Insurance Committee has passed a resolution that the time is opportune for the extension of the domiciliary medical service administered by insurance committees; that such service should be made as comprehensive as possible; and that it should operate alongside of and be in complete coördination with the public health and similar services now under the control of local authorities. The Committee urges among other things:

(1) That the medical benefit available under the Health Insurance Acts should be extended to the dependants of insured persons;

(2) That facilities should be made available to persons of a financial status similar to those included within the compulsory classes of the insurance scheme for becoming insured as voluntary contributors;

(3) That those who are unable from age or infirmity or other good cause to contribute for the purpose of securing the benefits provided under the insurance scheme should be provided with medical benefit through the public assistance committees, and should receive treatment in the same manner as those whose financial position compels or enables them to insure;

(4) That to be effective and prevent overlapping, the service to be provided to the dependants and others before mentioned should be a domiciliary service given by the general practitioners in the area and administered in precisely the same manner as medical benefit under the Health Insurance Act is presently administered—namely, through insurance committees in association with panel and pharmaceutical committees.

Limitation of Right to Change Doctor.

The Joint Committee of Approved Societies states that it would be prepared to support an amendment of the regulations as regards change of doctor

(*a*) subject to the change operating at four quarterly periods during the year on not less than four weeks' previous notice being given by the insured person, and

(*b*) subject to the right to change without notice being retained by the insured person in the event of (i) change of residence by the insured, even if new address be within two miles radius of present doctor's surgery; (ii) death, or retirement of doctor, or transfer of doctor's practice; (iii) consent being given to change by present [illegible].

The "Old Family Club" System.

Writing "at the sign of the lamp" in the *Birmingham Medical Review* for September, "F. G. L." recalls the resolution on the inclusion under the insurance service of the dependents of insured persons, carried by an overwhelming majority at the annual representative meeting of the British Medical Association, and asks: "But did our representatives really stay to think what actually it was they were voting for? It is just this: a revival of the old family club system under another name. Against that most of us older men have striven for years. The panel system as we know it is one thing: the universal family club system is something quite different; and no haggling concerning fees, improved financial conditions, anything of the sort, can get away from that very plain fact.

"There are many of us," he continues, "who have lively recollections of the family club system. An anxious and harassed mother would turn up on Monday morning with three or four or five children and a basket containing several bottles. She would not depart willingly until each of the bottles was filled. The same thing would happen on every other day of the week, not once, but many times. The doctor, anxious to get off on his round, would see to it that the bottles were filled; but how often did he, could he, afford the time to see that the bottles were filled efficiently; how often did he make sure that the bottles needed filling at all? It was a vicious system. It killed completely the enthusiasm of many a young doctor who, starting off filled with keenness, drifted and drifted with the tide, and landed up disillusioned, ineffective, hopeless. That is no fancy picture. We older folk have seen it over and over again."

He asks the representatives instead to imagine the doctor service of this country properly established and properly equipped. "Imagine," he says, "the service working in grouped teams of men, each put to do the work for which he is peculiarly fitted. Imagine the individual doctor freed from the dread of individual failure—through sickness, bad luck, inadequate capital, what you will. Imagine, above all, the sense of freedom which would come to every one of us if we were no longer the slaves of a crushingly individualistic system."

Censure by an Insurance Committee.

Another case of censuring a medical practitioner has recently occurred at Derby, where the Borough Insurance Committee has overruled the conclusions of the Medical Service Subcommittee. The allegation was that the practitioner had not given sufficient attention to the case of a panel patient who died of pulmonary tuberculosis. The subcommittee's finding was that "having regard to all the circumstances, the failure to visit did not warrant censure," but they agreed that the doctor should have shown more consideration; they recommended that no further action be taken. A member of the Insurance Committee, while protesting that he had the greatest respect for the impartiality of the chairman of the

subcommittee, suggested that the medical members of the subcommittee were "trying to whitewash" one of their fellow-practitioners. He moved a motion to censure the doctor, and the motion was carried; an amendment to reduce the remuneration by £5 was not carried, the clerk stating that the last word would rest with the Ministry of Health. This was a valuable reminder. There is no question that the medical profession, in taking its part in the National Health Insurance Act service, is more likey to obtain justice from a full inquiry before a Ministry of Health tribunal than from a popular debate by an insurance committee. It is regrettable that the good work done by medical service subcommittees should be depreciated by the attribution of improper motives.

MEDICAL NEWS

University of London.

Forthcoming Lectures.—Four lectures on the reticulo-endothelial system will be given at University College, Gower-street, by Dr. H. P. Gilding at 5 P.M. on Mondays, Oct. 13th, 20th, and 27th, and Nov. 3rd; and four lectures on metabolism of carbohydrates and fats will be given at King's College, Strand, by Mr. J. A. Hewitt, D.Sc., at 5 P.M. on Thursdays, Oct. 16th, 23rd, and 30th, and Nov. 6th.

University of Leeds.

At recent examinations the following candidates were successful:—

M.D.

I. Berenblum, Elsie G. M. Ford, Bessie Goodson, and D. Perk.

CH.M.

D. W. Currie.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—B. W. A. Fleming, L. Glick, F. C. Leach, N. W. Roberts, R. E. Tunbridge, and Lilian I. Walker.

Part II. (*New Regs.*).—G. M. Holliday, I. J. Keidan, J. Shernovitch,* and S. Silman.

Part III. (*New Regs.*).—G. M. Holliday, I. J. Keidan, J. Shernovitch, and S. Silman.

Part II. (*Old Regs.*).—B. S. Platt.*

Part III. (*Old Regs.*).—M. Goodman, J. N. Hill, G. Hirst, G. J. Marks, and B. S. Platt.

* Second-class Honours.

FINAL EXAMINATION FOR B.CH.D.

Elizabeth W. C. Irvine and B. Sleight.

FINAL EXAMINATION FOR L.D.S.

F. Brooke, C. W. Hayton, H. A. P. Roche, and A. O. Sutcliffe.

D.P.M.

J. J. Graham and G. C. Morris.

D.P.H.

Rosie B. Becker, E. J. S. Bonnett, A. R. Doyle, I. L. M. Wood, and Hester E. De C. Woodcock.

The West Riding panel practitioners' prize for proficiency in medicine was awarded to J. Shernovitch.

Courses on Nervous Disease.

At the National Hospital, Queen-square, a post-graduate course on Diseases of the Nervous System will be held from Oct. 6th to Nov. 28th. There will also be 12 clinical demonstrations, chiefly on Methods of Examination of the Nervous System, at noon on Tuesdays and Thursdays, and, if there are enough applicants, ten lectures on the Anatomy and Physiology of the Nervous System, at noon on Wednesdays and Fridays. Further information may be had from the Secretary of the hospital (Queen-square, London, W.C.1).

Contraception and Allied Questions.

A course of lectures on this subject has been arranged by the Royal Institute of Public Health and will be held at 37, Russell-square, London, W.C., at 4 P.M. on Thursdays from Oct. 9th to Dec. 11th. The lecturers will be the Rev. Herbert Gray, on Christian Civilisation and Contraception (Oct. 9th); Dr. Killick Millard on Contraception and the Medical Officer of Health (Oct. 16th); Mr. Alfred Goodman on Some Medico-Legal Aspects of Contraception (Oct. 23rd); Dr. C. P. Blacker on Sterilisation of the Unfit (Oct. 30th); Mrs. Marie Stopes, D.Sc., on the History and Theory of Contraceptive Technique (Nov. 6th), on Present-day Technique and Clinical Results in Contraception (Nov. 13th), and on Positive and Negative Control of Conception in its Various Technical Aspects (Dec. 11th); Dr. Maude Kerslake on Contraceptive Problems of Destitute or Injured Women (Nov. 20th); Mr. Harold Chapple, F.R.C.S., on Contraceptive Responsibilities of the Medical Practitioner (Nov. 27th); and Dr. F. J. McCann on Medical Arguments against Contraception (Dec. 4th). Admission to the lectures is free but is restricted to members of the medical profession and senior medical students.

Royal Medico-Psychological Association.

The Maudsley lecture will be given by Sir Henry McCardie (Mr. Justice McCardie) at the British Medical Association's House, in Tavistock-square, London, W.C., on Thursday, Nov. 20th, at 3 P.M. His subject will be Truth.

London Hospital Medical College.

The Schorstein Lecture will be delivered by Mr. H. S. Souttar, surgeon to the hospital, at 4.15 P.M. on Friday, Oct. 17th, in the Bearsted Clinical Theatre. His subject will be Radium in the Service of Surgery. Members of the profession are invited to attend.

Enlargement of Wembley Hospital.

This hospital was opened only two years ago, but the pressure upon it is already so considerable that it has been decided to enlarge it at a cost for the first portion of £10,000. The extensions will include 15 new beds, increased accommodation for the treatment of accidents, isolation and pathological wards, larger electrical and massage departments, a mortuary and a chapel.

Rebuilding of Middlesex Hospital.

The demolition of the remainder of the buildings is proceeding so rapidly that it is expected that the last vestige of the old building will have disappeared by the end of October, when excavations for the foundations of the new east wing will begin. The foundations of 150 years ago were only a few inches deep, and beams and floors were so seriously decayed that they crumbled upon removal. Very few of the old bricks could be got out whole.

Bretby Hall Orthopædic Hospital.

Lady Maud Baillie last week opened new open-air pavilions at the Derbyshire county institution which have been erected at a cost of £15,000. The hospital, which is established in the former seat of the Earl of Chesterfield, was opened in 1926 with accommodation for 50 patients; there are now 150. It was stated that 67 per cent. of the tuberculous patients discharged so far were classified as quiescent, 27 per cent. as improved, and 6 per cent. as not improved.

Industrial Settlement at Peamount Sanatorium.

Mr. James McNeill, Governor-General of the Irish Free State, inaugurated a new machinery shop at Peamount Sanatorium, Co. Dublin, last week, as the first step toward the establishment of an industrial settlement. It is the intention of the management to follow closely the lines on which the Papworth Village Settlement has been built up, and they have secured the assistance of Dr. P. C. Varrier-Jones as adviser. The Governor-General spoke of the great reduction in the death-rate from tuberculosis, the rate having fallen from 2·9 to 1·37 per 1000 in 25 years. The industrial settlement is intended as a memorial to the work and life of the late Sir William Thompson, for many years honorary secretary of Peamount Sanatorium.

Guild of St. Luke.

The Guild of St. Luke was founded 66 years ago by a few medical students, chiefly to meet their own religious needs. It now makes a wider appeal, and its membership is open to all students and practitioners of medicine, both men and women, who are members of the Church of England, the clergy of which are eligible as Clerical Associates. The Chapter meets in every month of each term, and a festival service is held yearly at St. Luke's tide. This year the service will be held in St. Paul's Cathedral, on Tuesday, Oct. 21st, at 8 P.M. Besides the parent Guild, there are a Women's Ward and a Hospital Students' Branch in London. There are also Provincial Wards in important Centres, and it is expected that many others will be established. Particulars of the objects and activities of the Guild can be obtained on application to the Secretary, Guild of St. Luke, King's College, Strand, W.C. 2.

Paying Patients at Sheffield.

The chairmen of the Sheffield voluntary hospitals are considering a proposal for the establishment of beds for paying patients.

Sittingbourne Memorial Hospital.

This hospital, which has cost £13,000, was formally opened recently by the Misses Garwood. The hospital has been given by Mrs. Garwood in memory of her parents.

An Australian Hospital Tax.

The Western Australian Budget, which has just been presented, includes a tax for hospital maintenance of three-halfpence in the pound, calculated to produce £192,000.

A Hospital Secretaryship.

For the secretaryship of Bishops Stortford Hospital, at a salary of £250 a year, there were over 700 applications. Mr. Harold Mannock, secretary of King's Lynn Hospital, was appointed.

THE Minister of Health has appointed Lieut.-Col. J. R. Lord, Medical Superintendent of Horton Mental Hospital, to be a member of the General Nursing Council for England and Wales.

THE Newcastle-on-Tyne Health Committee has recommended that Prof. Thomas Beattie be appointed medical director at the Newcastle General Hospital, and Mr. John Clay director of surgery.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Oct. 7th.—5.30 P.M., ORTHOPEDICS. (Cases at 4.30 P.M.) Cases:—Mr. Paul Bernard Roth: Multiple Congenital Deformities. Fracture of Astragalus. Mr. Hope Carlton: Compression Fracture of the Sixth Cervical Vertebra. Mr. W. H. Ogilvie: Injury to the Brachial Plexus. Congenital Abnormalities of the Hands. Congenital Abnormalities of the Wrists. Mr. Harold Edwards: Tuberculous Knee in a Woman aged 31 with an Unusual X Ray Appearance.
THURSDAY.—8.30 P.M., NEUROLOGY. Presidential Address:—Mr. Leslie Paton: Optic Atrophies.
FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases:—Mr. Cecil P. G. Wakeley: Tuberculous Disease of the Sternum. Congenital Shortening of the Femur in a Child. Dr. M. A. Cassidy: Adrenal Tumour. Dr. F. Parkes Weber: Anæmic Type of Hæmolytic Jaundice without Familial History. Mr. Eric A. Crook: Branchial Fistula. Mr. Julian Taylor: Report on a Case of Carbolic Poisoning. Mr. Harold Edwards: Popliteal Aneurysm. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Presidential Address by Mr. E. W. Brewerton. Papers:—Mr. Frank W. Law: Traumatic Zonular Cataract, with Illustrative Case. Mr. F. W. Edridge-Green: The Detection of Colour Blindness from a Practical Point of View. Cases will be shown.

BIOCHEMICAL SOCIETY.
SATURDAY, Oct. 4th.—3 P.M. (In the Biological Laboratory, Cambridge.) Communications:—E. L. Smith and V. Hazley: (*a*) Action of Antimony Trichloride with Cod-liver Oil and its Unsaponifiable Fraction. (*b*) A New Technique for the Antimony Trichloride Colour Test. B. C. Guha: Observations on the Newer Factors Necessary for the Normal Growth of the Rat. K. H. Coward, F. J. Dyer, K. M. Key, and B. J. E. Morgan: A Quantitative Method for the Biological Estimation of Vitamin A. B. Woolf: The Addition Compound Theory of Enzyme Action. M. Nierenstein, J. C. Pool, and N. V. Price: Pyrogallase, a New Enzyme. T. Moore: The Distribution of Vitamin A and Carotene in the Body of the Rat. B. H. E. Cadness and C. G. L. Wolf: Urinary Proteases. A. N. Drury and L. J. Harris: Vitamin B Deficiency in the Rat. Bradycardia as a Distinctive Feature. W. Ramsden: Denaturation of Proteins by Urea. R. P. Cook, J. B. S. Haldane, and L. W. Mapson: The Action of Carbon Monoxide on the Oxidation of Certain Substrates by *B. coli communis*. M. Stephenson and L. H. Stickland: Bacterial Reductions of Molecular Hydrogen. A. Patey and B. E. Holmes: Preliminary Observations of a Biochemical Nature on the Tumour-producing Filtrates from the Rous Sarcoma. D. R. P. Murray: The Inhibition of Esterases by Excess Substrate. Demonstrations:—R. P. Cook, J. B. S. Haldane, and L. W. Mapson: The Use of the Barcroft Manometer in Determining the Respiration of Tissues in the Presence of Mixtures of CO and O_2.

EUGENICS SOCIETY.
WEDNESDAY, Oct. 8th.—8.30 P.M.: (at the Rooms of the Linnean Society, Burlington House, W.) Quinquennial Health Assessments: (*a*) Unemployables. (*b*) National Health Insurance. Speakers: Mr. E. B. Turner, and others.

THE MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY 11, Chandos-street, Cavendish-square, W.
THURSDAY, Oct. 9th.—8.30 P.M., Dr. Woodcock: The Development of Individual Psychology in the Twentieth Century.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 6th, to SATURDAY, Oct. 11th.—METROPOLITAN HOSPITAL, Kingsland-road, E. Special Course in Medicine, Surgery, and the Special Departments (all-day Course).—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive Clinical Course.—TROPICAL HOSPITAL, Gordon-street, W.C. Special Course for three weeks. All day.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Special M.R.C.P. Lectures at 8.30 P.M. Tues.: Dr. L. J. Witts, Recent Work on the Liver. Fri.: Dr. L. J. Witts, Blood Diseases. Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Oct. 6th.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical Dental Department). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.
WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.
THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.
FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical and Throat Out-patients.
SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Oct. 6th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Oct. 6th.—3 P.M., Dr. Millais Culpin: Psychology —Nomenclature and Classification.

UNIVERSITY COLLEGE, Gower-street, W.C.
THURSDAY, Oct. 9th, and FRIDAY, Oct. 10th.—5.30 P.M., Prof. H. Spemann (Freiburg): Introduction to the Theory and Practice of Experimental Embryology.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 8th.—4.30 P.M., Mr. H. P. Winsbury White: Diagnosis and Treatment of Retention of Urine in General Practice.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
MONDAY, Oct. 6th.—4 P.M., Prof. W. H. Park: Pneumonia. (1st Harben Lecture.)
TUESDAY.—4 P.M. (2nd Harben Lecture.)
WEDNESDAY.—4 P.M. (Last Harben Lecture.)
THURSDAY.—4 P.M., Rev. A. H. Gray: Christian Civilisation and Contraception.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 7th.—4.15 P.M., Mr. E. D. Telford: Osteitis Fibrosa.
FRIDAY.—4.15 P.M., Dr. J. F. Wilkinson: Pernicious Anæmia.

Appointments

ALSTEAD, S., L.R.C.P. Lond., M.R.C.S., has been appointed Junior Medical Officer, Little Bromwich Fever Hospital, Birmingham.

CRAWFORD, A. MUIR, M.D. Glasg., F.R.F.P.S.G., Physician in charge of Wards, Royal Infirmary, Glasgow.

JOHNS, A. WALLACE, L.R.C.P. Lond., M.R.C.S., Assistant Resident Medical Officer, City of London Maternity Hospital, City-road.

THOMPSON, E. R., M.B., Ch.B. Edin., to be Certifying Surgeon under the Factory and Workshop Acts for the Crewkerne District, Somerset.

Vacancies

For further information refer to the advertisement columns.

Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College.—Taird Asst. Res. M.O. At rate of £150 to £200.

Auckland, New Zealand.—Sen. Asst. Pathologist. £750.

Bath, Royal United Hospital.—H.S. At rate of £200.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H. S.and Two H.P.'s. Each at rate of £100.

Birmingham, Dudley-road Hospital.—Jun. Asst. M.O.'s. Each at rate of £200.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110. Also Asst. S.

Birmingham, Selly Oak Hospital.—Part-time Radiologist. Also Part-time Dental Surgeon.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Brighton, Lady Chichester Hospital for Early Nervous Breakdowns. H.P. Also Jun. H.P. At rate of £100 and £50 respectively.

Brighton, New Sussex Hospital for Women and Children.—H.P. and H.S. Each £50.

Bristol Royal Infirmary, Cancer Research Dept.—Asst. to Pathological Laboratory. £400.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Bury Infirmary, Lancashire.—Third H.S. At rate of £150.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. Also H.S. All at rate of £130.

Cheadle, Cheshire, Barnes Convalescent Hospital.—Res. M.O. £250.

Croydon County Borough.—Asst. M.O., &c. £600.

Derby County Borough.—Asst. School M.O.

Derby, Derbyshire Royal Infirmary.—H.P. £150.

Dreadnought Hospital, Greenwich.—Asst. Radiologist. 50 gns. Also Physician to Out-patients.

Dudley, Guest Hospital.—Asst. H.S. £160.

East Ham Memorial Hospital, Shrewsbury-road, E.—H. P. At rate of £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. Also H.S. At rate of £125.

Exeter Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £150.

***Frimley Sanatorium.*—Jun. H.P. At rate of £100.**

***Gloucester, Gloucestershire Royal Infirmary and Eye Institution.*—Second H.S. At rate of £120.**

***Great Yarmouth General Hospital.*—Jun. H.S. At rate of £140.**

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hertford County Hospital.—Hon. Anæsthetist.

***Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.* Asst. P. Also Res. H.S.**

***Hospital for Consumption and Diseases of the Chest, Brompton, S.W.*—H.P. £50 for six months. Also Res. M.O. £350.**

Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.

Italian Hospital, Queen-square, W.C.—Hon. Asst. Gynæcologist.

***Liphook, Hants, King George's Sanatorium for Sailors.*—Asst. M.O. At rate of £200.**

Liverpool Hahnemann Hospital, Hope-street.—H.S. At rate of £100.

Liverpool, Royal Children's Hospital.—Second Res. M.O. At rate of £120.

London Homœopathic Hospital, Great Ormond-street, and Queen-square, Bloomsbury, W.C.—Anæsthetist. £50.

***Macclesfield General Infirmary.*—H.S. At rate of £180.**

***Maidstone, Kent County Ophthalmic and Aural Hospital.*—Hon. Ophth. S.**

***Manchester, Monsall Hospital for Infectious Diseases.*—Jun. M.O. £350.**

Manchester Royal Infirmary.—Surgical Officer to Out-Patients. £35.

Manchester, St. Mary's Hospitals.—Two H.S.'s. for Whitworth-street West Branch. Also two for Whitworth Park Hospital. Each at rate of £50.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Manchester, Withington Hospital, &c.—Asst. M.O. £350.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and S. Jun. H.P. and S., and Two Cas. O.'s. All at rate of £100. Also a Phys. and Surg.

Middlesbrough County Borough.—Two Asst. M.O.'s. Each £500.

Milford, Surrey, County Sanatorium.—2nd Asst. M.O. £400.

***Ministry of Health.*—Deputy Regional M.O. in connexion with National Health Insurance Medical Service. £800.**

Newcastle-upon-Tyne, General Hospital.—Sen. H.P. £300.

North Middlesex Hospital, Edmonton, N.—Res. Asst. M.O. At rate of £200.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

Nottingham General Hospital.—Res. Cas. O. At rate of £150.

***Oldham Royal Infirmary.*—Two H.S.'s. Each at rate of £175.**

***Paddington Green Children's Hospital, W.*—H.P. and H.S. Each £150.**

Portsmouth, Royal Portsmouth Hospital.—3rd H.S. At rate of £130.

Plymouth, South Devon and East Cornwall Hospital.—H.S. At rate of £100. Pathological Lab. Asst. £1 weekly. Also Med. Reg.

Preston County Borough.—Asst. School M.O. £600.

Preston, High Carley Sanatorium, near Urerston.—Temp. Asst. Tuber. M.O. At rate of £450.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, North Kensington, W.—H.P. At rate of £75.

Radium Institute, Riding House-street, W.—Clin. Asst. At rate of £300.

Reading, Royal Berkshire Hospital.—Cas.O. At rate of £150.

Richmond, Surrey, &c., Joint Isolation Hospital Committee, Hospital, Mogden.—Res. M.O. £350.

Rochdale Infirmary and Dispensary.—Sen. H.S. £250.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. £150.

***Sheffield Royal Hospital.*—H.S. Also Ophth. H.S. Each at rate of £80.**

St. John's Hospital, Lewisham.—H.P., H.S., and Cas. O. Each at rate of £100.

***St. Pancras Metropolitan Borough.*—Asst. M.O. £500.**

Salford Royal Hospital.—Res. H.S. to Orthopædic Dept. At rate of £125.

Shrewsbury, Royal Salop Infirmary.—Res H.P. At rate of £100.

Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. At rate of £180. Also Hon. Dermatologist.

Southern Rhodesia Medical Service.—Two Asst. and Relieving Govt. M.O.'s. Each £500.

Stoke-on-Trent, City of.—Tuberculosis Officer. £750.

Sunderland, Durham County and Sunderland Eye Infirmary.—Two Ophth. Surgeons. Each £350.

Taunton and Somerset Hospital.—Sen. H.S. £150.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Med. Reg. Also Sen. Res. M.O. £250.

Walsall General Hospital.—H.S. and Cas. H.S. At rate of £150 and £120 respectively.

West Bromwich and District General Hospital.—H.P. At rate of £200.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Chief Clin. Asst. 1 guinea per session.

West London Hospital, Hammersmith-road, W.—Hon. Ophth. S.

Westminster Hospital, Broad Sanctuary, S.W.—Wander Scholarship, &c. £250.

Winchester Royal Hampshire County Hospital.—Hon. Clin. Asst., for Out-Patient Dept.

Windsor, King Edward VII. Hospital.—Hon. Asst. Anæsthetist to Ear, Nose, and Throat Dept.

***Woolwich and District War Memorial Hospital, Shooters Hill, S.E.*—Res. M.O. £175. Also H.S. At rate of £100.**

Workmen's Compensation Act, 1925.—Member of the Medical Board for Silicosis. £750.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Manchester, West Central (Lancashire).

The Home Secretary gives notice that he is considering the question of appointing a Medical Referee under the Workmen's Compensation Act for the Paisley District of the Sheriffdom of Renfrew and Bute. Application should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than Oct. 18th.

Births, Marriages, and Deaths

BIRTHS.

BROWN.—On Sept. 25th, the wife of Dr. A. Carnegie Brown, of a daughter.

HIGGS.—On Sept. 23rd, at Chester-place, Regent's Park, the wife of Sydney Limbery Higgs, F.R.C.S., of a daughter.

HUDDY.—On Sept. 15th, at a nursing home, the wife of Ernest C. H. Huddy, M.B., B.S.Lond., of a son.

JAMIESON.—On Sept. 22nd, at Ventnor Villas, Hove, the wife of A. M. Jamieson, M.B., Ch.B., Cranbrook, Kent, of a daughter.

KINNISON.—On Sept. 23rd, at Rosely, Arbroath, the wife of R. Norman Kinnison, M.B., Ch.B., of a son.

MARRIAGES.

BOLT—MILLER.—On Sept. 24th, at St. Peter's Church, Edinburgh, Richard Frank Bolt, M.R.C.S., L.R.C.P., Great Russell-street, London, to Louisa, youngest daughter of the late Mr. John Ashbridge Miller and Mrs. Ashbridge Miller, of Ventnor-terrace, Edinburgh.

DEIGHTON—REYNOLDS.—On Sept. 15th, at the British Consulate, Sao Paulo, Brazil, C.S. (Jerry) Deighton to Dorothy Kathleen Reynolds, M.R.C.S., L.R.C.P.

DE NAVASQUEZ—SAMUEL-CAVESTRI.—On Sept. 26th, in London, Count Sigiberto de Navasquez, M.B., to Sylvia, daughter of the late Philip P. Samuel and Mrs. Cavestri, of Grove-court, St. John's Wood.

THYNE—MACKENZIE.—On Sept. 16th, at St. Columba's Church, Pont-street, James Pattinson Thyne, M.R.C.S., L.R.C.P., to Jessie Sutherland, daughter of Mr. and the late Mrs. Mackenzie, Mid Clyth, Caithness.

WRIGLEY—SLATER.—On Sept. 23rd, at the Parish Church, Lambeth, Arthur Joseph Wrigley, M.D., F.R.C.S., to Ann, fourth daughter of Colonel Slater, C.M.G., and Mrs. Slater, of Holmses, Dunscar, Bolton.

DEATHS.

BRUNTON.—On Sept. 27th, at a nursing home in Margate, Walter Reyner Brunton, M.R.C.S., L.R.C.P., M.B., D.P.H., of Collingwood-terrace, Westgate-on-Sea, aged 63.

BURRELL.—On Sept. 23rd, suddenly, at Nassington, Edwin Burrell, M.D., aged 87.

TYLECOTE.—On Sept. 22nd, at Mullion, South Cornwall, Charlotte Dora, beloved wife of Prof. Frank E. Tylecote, M.D., F.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

HOSPITAL LIBRARIES: CAMBRIDGE CONFERENCE.

(FROM A CORRESPONDENT.)

LIBRARIES for patients in hospital are developing apace, notably in Great Britain, Germany, Denmark, and America. They are based on the principle that the benefit and pleasure of reading is specially the right of the sick person. That a well-stocked library for patients should form part of the equipment of every hospital was the substance of the resolution passed at the Congress of the Royal Institute of Public Health last June, and the subject claimed a whole session at the conference of the Library Association held in Cambridge from Sept. 22nd to 27th, when papers were read by Miss P. Redmayne, hon. librarian of St. Thomas's Hospital; Miss Ostenfeld, assistant librarian at the Central Library, Odense, Denmark; Miss Perrie Jones, supervisor of institutional libraries, State Board of Control, St. Paul, Minnesota; and Miss Kathleen Jones, general secretary of the Division of Public Libraries, Boston, Mass. These papers covered a wide ground, including an account of such hospital libraries as now exist, the methods of obtaining books through the public libraries, the choice and training of hospital librarians, and the results observed amongst the patients when books are given out with understanding and discrimination.

SUITING THE BOOK TO THE PATIENT.

Miss Ostenfeld explained that gifts of books to hospitals, no matter how well selected, were not enough, except perhaps in the field of general fiction. As soon as patients wanted to follow a special line of reading, whether in fiction or non-fiction, the hospital library work could not depend entirely on gifts. Here the aid of the public library was needed. To many people the stay in hospital was the only time in their lives when they had a quiet time for reading, but this opportunity was often thwarted by the difficulty of procuring the right books. The work of suiting the book to the patient might be undertaken by a member of the hospital staff, but an outsider had a psychological advantage, and no sister or nurse would have time to know the contents of every book. The hospital librarian was therefore to be chosen from the staff of a public library or from voluntary workers with some library training. In this country the question of trained librarians has hardly been tackled. In Denmark certain of the staff of the public libraries act as hospital librarians so many days a week. If each large hospital could appoint one such chief librarian, he or she could be assisted by the necessary number of voluntary workers who should have some training in librarian's work. A short course of lectures, some given by a librarian, some by a member of the medical or nursing staff, would meet the case in the first instance. In Denmark the public library bears the expense of providing books, but the hospitals, which are all under State management, pay for the time it takes the trained librarian to visit the wards.

THE HOSPITAL LIBRARIAN.

There must, said Miss Kathleen Jones, be someone to make the necessary contact between books and patients; and she illustrated the importance of this personal contact by what happened in a Massachusetts city. Here the public library had for a couple of years made deposits of books only; interest was lukewarm, the books were not used enough to pay for the trouble of sending them. Last year the librarian decided to follow the example of other city libraries by sending to the hospital twice a week one of his most attractive assistants—a woman of poise, culture, and social instincts. She took books to the wards, talked about them with the patients, borrowed special books for certain patients. The circulation immediately doubled, then trebled, and from being indifferent the doctors and nurses became enthusiastic over the psychological effect of reading on the patients. Personal service, Miss Jones remarked, is what counts, but the librarian must have the ability to make social contacts with every class among patients, doctors, and nurses. She must have a broad knowledge of and catholic taste in books, which will enable her to fit books to people. She must have sufficient library experience to enable her to handle easily details of technique. This sets a standard which it will not be possible always to reach; the best we can do is to work towards it. In any case, the librarian should be under supervision either from the public library or from the responsible hospital agency.

PSYCHOLOGICAL ASPECT.

It has been written by E. F. Garesché that "The books in a well-chosen hospital library stand row upon row like phials in a pharmacy. These precious packages contain medicine for the mind, more keen, more cordial than the medicine for the body. If anyone is sad a book will cheer him; if anyone is dull and weary, a book will instruct him; if fretful, it will calm him; if rebellious, it will bring him peace. . . . There should be in every hospital a physician of the mind, a skilful student of books who will recommend to every patient the phials of sweet thoughts and cordial sentences best suited to his mental cure." It was on this psychological aspect of books that Miss Perrie Jones addressed the conference. She agreed with Dr. Ruhberg in thinking of books as an adjunct and help to the physician in securing definite results in solving a difficult problem. Individuals, she said, are continually striving against their environment, being forced constantly to reconcile and tone themselves to their surroundings. If their attitude is right they adjust themselves successfully to facts, accept life more or less philosophically, and go their way. Others are unable to accept conditions as they are, or to control the emotional conflicts that arise from the conditions in which they live; these people frequently take refuge in psychoneurosis. With this class Miss Jones has occasionally had success in using books as a therapeutic agent. The key to results in these problems is the ability to change or modify their attitude. It has been estimated that psychic elements constitute 65 per cent. of the suffering among patients. They are beset by various fears arising out of their affliction. Such fears are alleviated by confidence in the physician and the hospital staff, by beneficial results in treatment—including books. These books should be free from elements that arouse fear and apprehension relative to their trouble. They should be soothing and entertaining. War books are too depressing. Books of the outdoors and wide open spaces, such as Grey's novels and fishing stories, are valuable among male patients. But, Miss Jones concluded, the use of books as a therapeutic agent is strictly an individual problem.

EDUCATIONAL VALUE.

In many instances special technical books have been procured for certain patients, enabling them to fill in a gap in their studies, or to pursue their hobbies further. The time spent in hospital may provide an opportunity for getting ahead with some study which is either essential or recreative. In both instances the psychological benefit is obvious. There is also the type of patient who, in the stress of ordinary life, has never discovered for himself a latent natural interest in natural history or poetry. A librarian of understanding can give these a new and lasting

interest in life. The value of occupational therapy is well recognised, while that of mental occupation is still waiting for its exponents in hospital practice. Progressive development in England may follow the adoption at the Cambridge congress of a comprehensive resolution suggesting methods of coöperation between public libraries, hospitals, and the Red Cross Hospital Library, with the appointment of a committee to work these out. A session is to be devoted to hospital library work on Nov. 21st at the forthcoming public health congress to be held in the Royal Agricultural Hall, tickets for which can be obtained from the organising secretary of the Red Cross Hospital Library, 48, Queen's-gardens, London, W. 2.

THE RED CROSS HOSPITAL LIBRARY.

The library at this address, financed by the Joint Council of the Order of St. John and the British Red Cross Society, was founded to supply books to hospitals for ex-Service men. In actual fact it is now sending books to over 2000 institutions, including general hospitals, sanatoriums, mental hospitals, convalescent homes, military and naval hospitals, and some British hospitals overseas. All the books are free gifts, non-returnable, and are renewed as requests come in. Special books are bought, as far as means permit, and voluntary workers installed as librarians. Clearly, however, something more is needed for the development of this work on anything like a national scale, possibly some form of coöperation between public libraries and the Red Cross Hospital Library. Voluntary hospitals might be prepared to make some contribution to a central library, sufficient to cover at least the expenses of voluntary librarians. Then if local public libraries were to provide special books and take a share in the training of librarians there would be the nucleus of an organisation from which a larger scheme could grow.

POPULAR HEALTH EDUCATION IN GERMANY.

IN the current number of the *World's Health*, the quarterly journal of the League of Red Cross Societies, there is a paper on the methods and aims of popular health education in Germany by Prof. Adam, secretary-general of the Reich Committee on this subject. Popular health education seems to have proceeded apace during the last few years in Germany. The "health week" organised throughout Germany in 1926, with demonstrations in more than 2000 localities, yielded interesting results, the most important of which was the establishment of uniformity in the programme. In the past health education had been largely sporadic, without systematic collaboration between all the persons and institutions concerned. The Reich Committee has acted as a coördinating agency and clearing-house, and, representing as it now does various health organisations, public services, and insurance companies, it is able to eliminate overlapping. When the introduction of health lessons into school programmes was first mooted, the question as to whether the doctor or the teacher is best qualified to give such instruction gave rise to considerable discussion. The choice finally fell on the teacher, on the basis that even the most efficient doctors are apt to lack the gift for imparting knowledge to the young, and have not been trained for this purpose. It has been found a simple matter to put the new generation of teachers in a position to do this work, for hygiene has been introduced into the curriculum of the teachers' training colleges. The training of teachers already in office has proved far more difficult, and the committee, backed by the Government, has recently set up a large institution with the object of providing established school teachers with the necessary instruction. The committee has enlisted the press as an educational ally, for the German lay press, like that of most other civilised countries at the present time, has found popular health articles to be good copy. Most of the German newspapers publish health articles with advice as from the family doctor. The committee keeps in touch with the authors of these articles and with the provincial press. Every two or three weeks the committee issues 3400 copies of a press communiqué, which was formerly sent direct to the newspapers, but is now addressed to doctors, teachers, employees of relief organisations, and to others who undertake to give publicity to its contents. Health education by the cinema has proved less popular, the only plays in this field that have proved successful being two which deal with venereal disease. All the other health educational films have been withdrawn from circulation, cinemas refusing to exhibit them even when they were offered free of charge. The best, the short subsidiary films with a health moral, was one with the title, "Health without Tears," in which a tiny figure imparts enormously important advice, the drollness of the trick drawings being a stimulating contrast to the serious lessons they convey. All who have recently sojourned in Germany long enough to study the physique and bearing of the new generation will have been struck by its athletic healthiness, and no visitor to the international health exhibition, still being held in Dresden, can have come away from it without realising what a big part popular health education and physical culture are now playing in the Germany of to-day.

THE CARE OF MOTHER AND INFANT.

THE proprietors of Cow and Gate have provided a useful handbook[1] which touches on the main points in the diet and care of the expectant mother and on breast-feeding, artificial feeding, and infant feeding in the tropics; minor ailments of newly born and young children are included in a short survey, and some simple recipes are introduced into another chapter. The aprendix contains references to some of the special products of the Cow and Gate factories, and the book is illustrated with many encouraging photographs of stout infants.

MEATH HOSPITAL.

INFORMATION about the Meath Hospital and County Dublin Infirmary was not received in time for inclusion in our Students' Number. The hospital contains 160 beds available for medical and surgical patients, special wards for children, and 40 beds for the study of continued and eruptive fevers. There is a large extern department in which the commoner ailments are brought under the notice of students and the minor operations of surgery are taught. The Dr. Joseph Smyth scholarship in medicine, value £50, is awarded bi-annually; a gold and a silver medal are given annually on the result of an examination in clinical medicine and surgery.

THE RABBIT IN HEALTH AND DISEASE.

UNDER this title Dr. J. B. McDougall, medical director of the British Legion village at Aylesford, has written a book[2] on the diseases of the domestic rabbit mainly for those who are interested in the breeding of the animals for fancy, fur, or meat. It will be useful to those who have to look after experimental animals. The descriptions of diseases, diagnosis, and treatment are clear and practical, more in the style of the medical man than the laboratory bacteriologist. "Smorl's disease" (for Schmorl) is a misprint (p. 76). One curious point is raised in the possibility that vent disease (*spirochætosis*) has some relation to the mutation known originally as "Castorrex" and now as "Rex"—not from the kingly appearance of the animals but from their having short, close fur, without long hairs, resembling that of the beaver (Castor).

[1] Motherhood: A Guide for Mothers. Third edition. Guildford: Cow and Gate, Limited. 1930. Pp. 163. 1s.
[2] Idle: Watmoughs. 1929. Pp. 106. 5s.

INVERNESS NORTHERN INFIRMARY.—The King has given his consent to this hospital being called henceforth "The Royal Northern Infirmary."